

**DISPOSITIONAL MINDFULNESS, SELF-COMPASSION,  
AND OBSERVED PARENTING BEHAVIORS IN EARLY INFANCY**

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**Abstract**

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and Observed Parenting Behaviors in Early Infancy

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The early postpartum period is a critical window for establishing parent-infant relationships that support children's long-term development. Internal traits such as dispositional mindfulness and self-compassion have been linked to positive parenting outcomes, but few studies have examined whether these self-reported traits translate into observable parenting behaviors. This study explored the associations between parent-reported dispositional mindfulness and self-compassion and observed parenting behaviors in early infancy. Data were drawn from the NEW Moms Connect Study, a longitudinal investigation of low-income, racially diverse, first-time mothers. Participants (N = 189) completed validated self-report measures of mindfulness and self-compassion, and their parenting behaviors were assessed through video-coded observations of structured parent-infant interactions. Correlational and linear regression analyses were conducted

using multiple imputed datasets. As expected, dispositional mindfulness and self-compassion were strongly positively correlated ( $r = .78, p < .001$ ). However, contrary to hypotheses, neither trait was significantly associated with observed parenting behaviors. Findings suggest that while trait mindfulness and self-compassion may be important internal capacities, they do not independently predict how parenting behavior manifests during brief observed interactions in early infancy—a period in which caregiving lays the foundation for attachment, emotion regulation, and developmental outcomes. Theoretical implications for mindful parenting models and practical considerations for intervention design are discussed. Results underscore the complexity of linking intrapersonal processes to interpersonal behavior and highlight the need for further research incorporating contextual and mediating variables, particularly in underrepresented populations.

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# Chapter 1: Introduction

## 1.1 Background

The early years of life are a formative period for child development. During infancy, the parent-child relationship serves as the primary context through which social, emotional, and cognitive development unfolds. Sensitive, attuned, and responsive caregiving is foundational to building secure attachments and fostering healthy brain architecture (Calkins, 2007; Fox et al., 2010; National Scientific Council on the Developing Child, 2004). Consequently, identifying the determinants of parenting behaviors has become an area of growing interest in developmental and educational research, particularly within high-stress contexts and underrepresented populations.

While parenting practices are influenced by a range of environmental and contextual factors (e.g., cultural norms, structural constraints, and psychosocial stressors), increasing scholarly focus has turned toward internal, modifiable traits within the parent, including dispositional mindfulness and self-compassion. Dispositional mindfulness, the inherent tendency to attend to present-moment experiences with openness and nonjudgment (Brown & Ryan, 2003), and self-compassion, the capacity to relate to oneself with kindness in the face of difficulty (Neff, 2003), are associated with psychological well-being, emotion regulation, and interpersonal functioning, all of which are essential for supporting warm, sensitive, and responsive caregiving. Given that early caregiving requires emotional availability and present-focused attention, identifying parent traits that enhance these capacities offers a promising avenue for supporting early relational health.

Mindful parenting, a relational approach that integrates present-moment awareness and compassion into the parent-child relationship, is well-established in developmental and clinical literature (Duncan et al., 2009; Kabat-Zinn & Kabat-Zinn, 2014). It emphasizes emotional awareness, self-regulation, and compassion for both self and child—capacities that are associated with more sensitive, attuned, and developmentally supportive caregiving (Crandall, Deater-Deckard, & Riley, 2015).

While a substantial body of research has demonstrated links between mindful parenting and a range of positive outcomes, including lower parenting stress, improved emotion regulation, and more supportive parent-child interactions (Burgdorf et al., 2019; Townshend et al., 2021), much of this work relies on parent self-report, limiting the ability to draw conclusions about how mindfulness manifests in actual observed behavior. Observational studies, which provide a more direct and objective indicator of parenting quality (Zaslow et al., 2006), remain underutilized in this literature.

At the same time, much less is known about what determinants drive mindful parenting itself. Existing observational studies (e.g., Coatsworth et al., 2010) often focus on the effects of mindful parenting interventions, rather than naturally occurring, trait-level variation. Few studies have directly examined how distinct internal and modifiable parent traits such as dispositional mindfulness and self-compassion relate to observable parenting behaviors, which provide a more behaviorally grounded assessment of parent-child interaction quality than parent self-report affords (Zaslow et al., 2006).

To address this gap, the current study investigates whether self-reported dispositional mindfulness and self-compassion predict observed parenting behavior during early infancy, using secondary data from the NEW Moms Connect Study—a longitudinal study of low-income, first-time mothers. By incorporating both parent-report and observational methods, the study aims to advance understanding of the determinants of early relational health and inform theory and practice regarding how trait-level internal capacities may be behaviorally expressed in caregiving.

## 1.2 Statement of the Problem

Despite expanding literature on mindfulness-based approaches to parenting, much of the existing research focuses on outcomes rather than origins, examining how mindful parenting affects children, rather than what drives it in the first place. Furthermore, studies that do explore underlying traits such as dispositional mindfulness and self-compassion typically rely on parent self-report, limiting insight into how these internal capacities translate into observable parenting behaviors. This limitation has important implications, particularly for the development of mindfulness-informed parenting interventions. These programs are often grounded in theoretical models that assume internal capacities such as mindfulness and self-compassion translate into improved parent-child interactions (Duncan et al., 2009). However, most evaluations rely heavily on parent self-report, with relatively little behavioral validation (Burgdorf et al., 2019; Townshend et al., 2021). If self-reported traits are not reflected in observable caregiving behavior, the mechanisms of action, and thus the effectiveness, of such interventions warrant closer examination.

Observational studies offer a more direct and objective lens into parenting behavior (Zaslow et al., 2006) yet remain relatively rare in this body of research. Those that do exist often assess parenting outcomes following structured interventions, but rarely examine the role of naturally occurring, trait-level variation in mindfulness or self-compassion. While the dataset used in the current study included intervention components, the present analysis focuses on associations between self-reported dispositional traits and observed parenting behavior, regardless of intervention group, to better understand the potential pathways through which internal capacities may shape caregiving. As a result, this study helps address a critical gap in understanding whether and how internal, modifiable traits translate into observable parenting behavior during the earliest stages of parenting.

There is also a paucity of research examining these constructs in populations experiencing high levels of psychosocial stress, such as exposure to adversity, economic hardship, and environmental stressors—conditions that can compromise parenting capacity while heightening the relevance of internal resources like mindfulness and self-compassion (Garofalo, 2022; Lengua et al., 2023).

This study begins to address these gaps by examining whether self-reported dispositional mindfulness and self-compassion predict observed parenting behavior during early infancy, using secondary data from the NEW Moms Connect Study, a longitudinal study of low-income, first-time mothers (Lengua et al., 2023). By incorporating both parent-report and observational methods in a sample of mothers navigating socioeconomic adversity, this study aims to advance understanding of the determinants of early relational health and inform theory and practice regarding how internal traits may manifest in caregiving behavior in an underrepresented population.

### 1.3 Purpose of the Study

The purpose of this study is to examine whether self-reported parent dispositional mindfulness and self-compassion are associated with observed parenting behaviors during early infancy. Using secondary data from the NEW Moms Connect Study—a longitudinal study of low-income, first-time mothers (Lengua et al., 2023)—this study investigates whether these internal, modifiable traits are linked to the quality of maternal interactions with their infants, as captured through validated self-report measures and standardized observational ratings of parenting behavior.

### 1.4 Research Questions and Hypotheses

#### **Research Question 1:**

Are dispositional mindfulness and self-compassion significantly positively correlated?

#### **Hypothesis 1:**

Dispositional mindfulness and self-compassion will be significantly positively correlated, reflecting their shared foundation in self-regulation and nonjudgmental awareness.

#### **Research Question 2:**

Are higher levels of dispositional mindfulness associated with more positive observed parenting behaviors?

#### **Hypothesis 2:**

Dispositional mindfulness will be positively associated with a composite measure of observed parenting behavior—comprising sensitivity, responsiveness, and warmth—such that higher mindfulness corresponds to more positive caregiving interactions.

**Research Question 3:**

Are higher levels of self-compassion associated with more positive observed parenting behaviors?

**Hypothesis 3:**

Self-compassion will be positively associated with a composite measure of observed parenting behavior—comprising sensitivity, responsiveness, and warmth—such that higher self-compassion corresponds to more positive caregiving interactions.

**Research Question 4:**

Do dispositional mindfulness and self-compassion each contribute uniquely to the prediction of observed parenting behavior when modeled together?

**Hypothesis 4:**

Dispositional mindfulness and self-compassion will each account for unique variance in observed parenting behavior when simultaneously entered into a regression model, suggesting their distinct contributions to caregiving behavior.

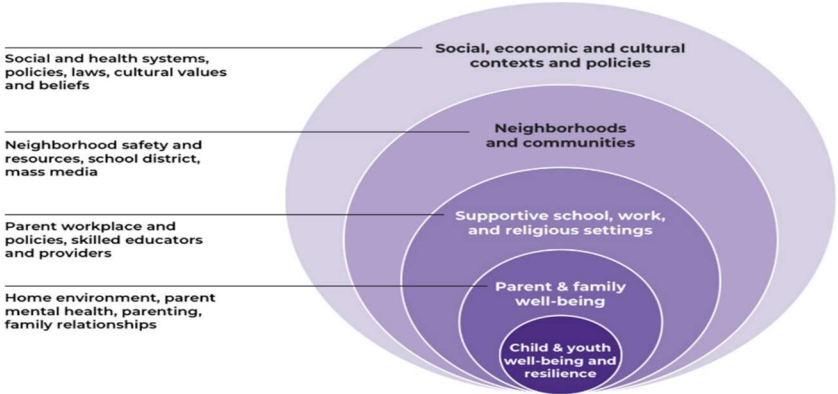
# 1.5 Theoretical Framework

This study is informed by three theoretical perspectives that together offer a coherent explanation of how internal traits such as mindfulness and self-compassion may influence parenting behavior, particularly within contexts of heightened adversity.

First, Bronfenbrenner’s bioecological model (Bronfenbrenner & Morris, 2006; see Figure 1.) provides a foundational understanding of development as shaped by dynamic interactions between individuals and their environmental systems. Of particular relevance is the microsystem, where parent-child interactions occur, and the proximal processes that drive development through consistent, meaningful engagement. For families experiencing high levels of psychosocial stress, such as those in the NEW Moms Connect Study, internal traits may serve as important buffers that support caregiving capacity in the face of external challenges.

**Figure 1.**

*Bronfenbrenner’s (2006) Bioecological Model*

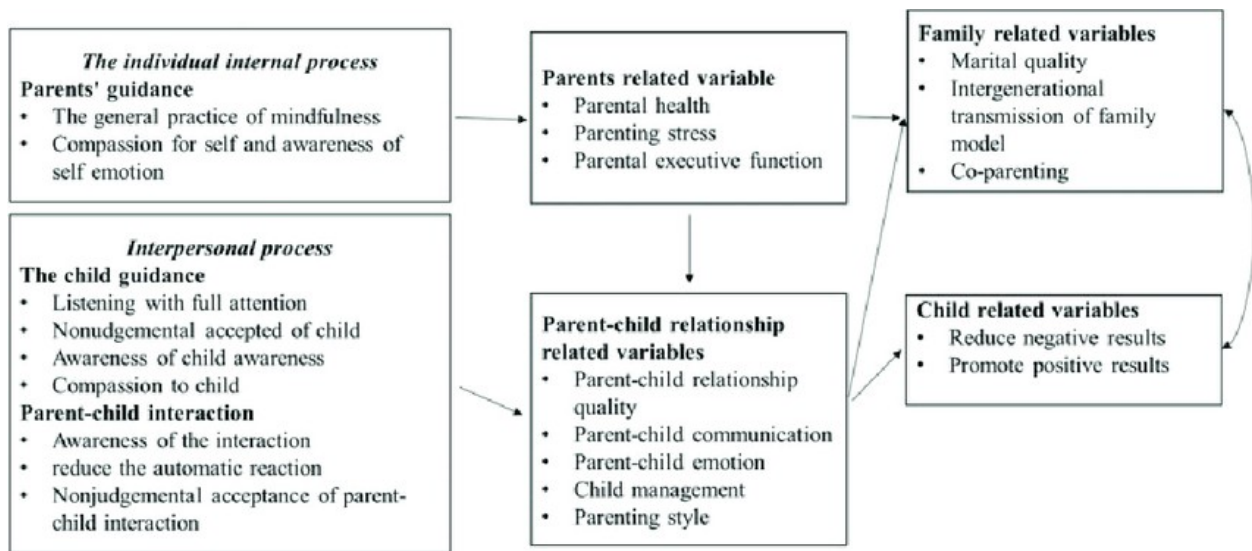


*Note.* From " The Bioecological Model," by The Center for Child and Family Well-Being, 2024, <https://ccfwb.uw.edu/about-us/the-bioecological-model/>. Copyright 2024 by The University of Washington.

Overlaying this ecological lens is Chen et al.'s (2017) Theoretical Model of Mindful Parenting's Effects (see Figure 2.), which outlines two key pathways through which mindfulness influences parenting: intrapersonal processes, including emotion regulation, self-awareness, and self-compassion; and interpersonal processes, such as present-centered attention to the child, empathy, and reduced reactivity within the parent-child relationship. This model is particularly salient for high-stress caregiving populations, such as low-income, first-time mothers. For these parents, intrapersonal regulation (e.g., emotion regulation and self-compassion) may be critical to sustaining consistent, attuned caregiving in the face of chronic stress or external adversity. The distinction between intrapersonal and interpersonal pathways also maps onto this study's methodological design, which assesses both internal capacities via self-report and behavioral caregiving via observation.

**Figure 2.**

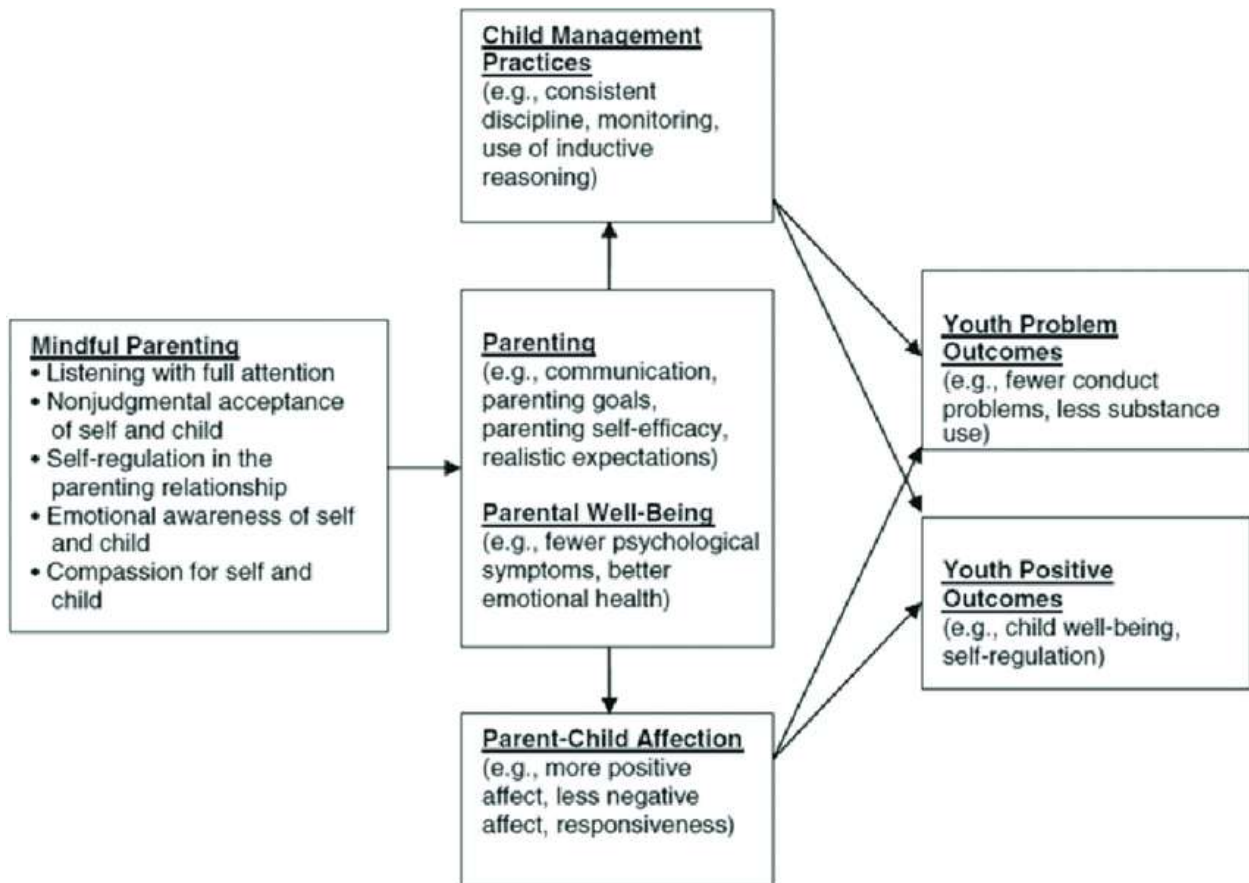
*Chen et al.'s (2017) Theoretical Model of Mindful Parenting's Effects*



Finally, Duncan et al.'s (2009) Model of Mindful Parenting (see Figure 3.) defines five core components that link mindfulness to parenting behavior: listening with full attention, emotional awareness of self and child, self-regulation, nonjudgmental acceptance, and compassion. These dimensions closely align with the parenting behaviors assessed in this study's observational coding framework, particularly warmth, responsiveness, and sensitivity. While this framework has primarily been examined through self-report and intervention studies, its constructs offer a useful lens for exploring how these capacities manifest in observed parenting behavior in naturalistic early parenting contexts.

**Figure 3.**

*Duncan et al.'s (2009) Model of Mindful Parenting*

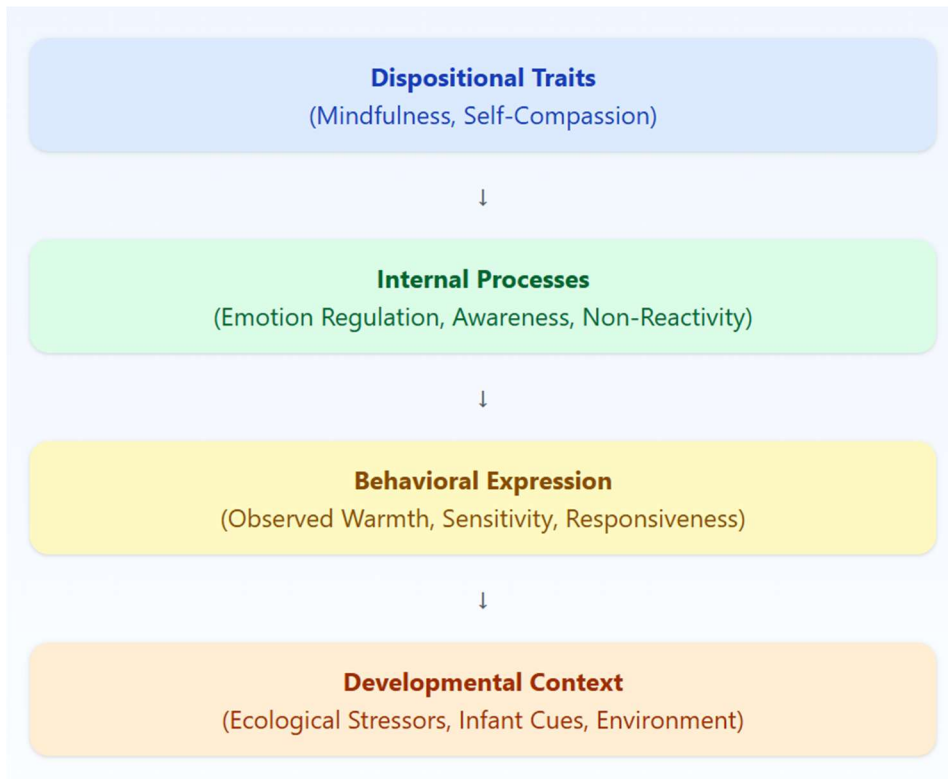


Together, these frameworks support the central hypothesis of this study: that dispositional mindfulness and self-compassion—internal, modifiable traits—may be reflected in observable parenting behaviors during early infancy. By drawing from ecological and mindfulness-based theories, this study positions these traits as potential protective factors within high-stress caregiving environments and contributes to theoretical understandings of how intrapersonal resources support early relational health. This integrative approach also reflects a systems perspective, recognizing how individual traits interact with caregiving environments to shape developmental outcomes in early childhood.

To illustrate how these frameworks operate in concert, Figure 4 presents a simplified conceptual model linking dispositional mindfulness and self-compassion to observed caregiving behavior. Grounded in Bronfenbrenner’s ecological systems theory, Duncan et al.’s mindful parenting dimensions, and Chen et al.’s model of parental self-regulation, the model depicts how internal capacities guide adaptive responses within proximal parent–infant interactions. For instance, when an infant cries, a parent high in dispositional mindfulness may notice their emotional reaction, pause to regulate, and respond with warmth and sensitivity rather than automatic stress reactivity. This example highlights the theorized pathway through which internal traits translate into observable caregiving behavior, situating the current study within an integrated developmental and contextual framework.

**Figure 4.**

*Conceptual Model of Trait–Behavior Pathway*



*Note.* This model illustrates how dispositional mindfulness and self-compassion influence caregiving through internal regulation and awareness processes, resulting in observable behaviors such as warmth, sensitivity, and responsiveness within real-world parenting contexts.

## 1.6 Significance of the Study

This study advances understanding of how internal, modifiable traits, specifically dispositional mindfulness and self-compassion, may influence parenting behavior during a developmentally critical period. Early infancy is a foundational window for establishing parent-child interaction patterns, making it a particularly salient time to examine how internal capacities are expressed in caregiving.

While mindfulness and self-compassion have been widely linked to emotional regulation and parenting outcomes through self-report measures, few studies have assessed whether these traits are associated with observed caregiving behavior, particularly in naturalistic settings. By incorporating both self-report and observational methods, this study enhances methodological rigor and addresses a key gap by directly examining whether trait–behavior associations are observable in early parenting.

The findings also carry practical significance for parenting interventions. Mindfulness-informed programs are increasingly used to promote positive parenting and reduce stress in early childhood settings. However, if self-reported mindfulness and self-compassion are not consistently reflected in caregiving behavior, the mechanisms of change underlying these interventions warrant closer examination. Understanding whether and how internal traits are behaviorally expressed can help inform the development and refinement of programs aimed at supporting early relational health, including those embedded in pediatric care, Early Head Start, early intervention services, and home-visiting models that address maternal stress and parent-child attachment.

Importantly, this study focuses on a sample of low-income, first-time mothers, a population that is both underrepresented in parenting research and disproportionately affected by psychosocial stressors (Garofalo et al., 2022; Lengua et al., 2023). The results can inform equity-focused approaches to early parenting support by identifying strengths-based, modifiable traits that may buffer against environmental adversity. Future research may also explore these questions in other caregiving configurations that experience significant stressors, including parents of children with special needs, who, like low-income first-time mothers, often face elevated stress and systemic barriers to support.

Additionally, given cultural variations in the expression of internal traits and parenting behaviors (Bornstein, 2012; Leerkes, Supple, & Su, 2020), findings from this study may provide a foundation for adapting interventions to be culturally relevant and responsive to diverse family contexts.

Beyond implications for parents, these findings also hold relevance for the early childhood education (ECE) workforce. Educators, like parents, engage in emotionally attuned, relational interactions that rely on self-regulation, reflection, and compassion. Understanding how internal capacities such as mindfulness and self-compassion relate to caregiving behavior may inform professional development efforts aimed at supporting educator well-being and the quality of teacher–child interactions in early learning environments. Integrating insights from this study into ECE training could strengthen the relational foundations of care that support both children and adults in early learning settings.

## 1.7 Definition of Terms

### 1.7.1 Core Psychological Constructs

#### **Mindfulness:**

- **Dispositional (Trait) Mindfulness:** A stable tendency to attend to present-moment experiences with openness and nonjudgment, reflecting a general tendency to be mindful across time and situations, regardless of formal mindfulness training or practice (Brown & Ryan, 2003; Baer et al., 2006).
- **State Mindfulness:** A temporary state of present-centered, nonjudgmental awareness that may fluctuate based on situational context or intentional mindfulness practice. State mindfulness is context-dependent and typically assessed in relation to a specific activity or moment in time (Kiken et al., 2015; Tanay & Bernstein, 2013).

**Self-Compassion:** The capacity to respond to one's own suffering with kindness, emotional balance or mindfulness, and a sense of shared humanity (Neff, 2003). In this study, self-compassion is conceptualized as a dispositional trait.

Notably, although dispositional mindfulness and self-compassion are conceptualized as trait-like qualities, they are not immutable. These constructs capture relatively stable tendencies to attend to the present moment and to respond to oneself with compassion; however, empirical research demonstrates that such tendencies can be strengthened through intervention and practice over time (Shapiro et al., 2006; Gu et al., 2015). Accordingly, in this study they are treated as stable yet modifiable traits: enduring dispositions that remain sensitive to contextual influences and intentional cultivation. This framing explains why dispositional measures are frequently used both as predictors of long-term outcomes and as outcomes in intervention research.

**Emotion Regulation:** The ability to monitor, evaluate, and modify emotional responses to achieve goals or adapt to situational demands (Gross, 1998). In this study, emotion regulation is conceptualized as a foundational intrapersonal process through which mindfulness and self-compassion may influence parenting.

**Internal, Modifiable Traits:** Traits that originate within the individual and are potentially amenable to change through mindfulness-based training or other interventions (Shapiro et al., 2006). In this study, mindfulness and self-compassion are treated as internal, modifiable traits.

**Trait-Level Predictors:** Internal, relatively stable characteristics (e.g., dispositional mindfulness, self-compassion) that may influence observable parenting behavior, independent of situational or environmental variation.

### 1.7.2 Developmental and Parenting Concepts

**Early Infancy:** The developmental period from approximately birth to 6 months of age, during which foundational parent-infant interactions shape early attachment and neurodevelopment.

**Proximal Processes:** Enduring, developmentally significant interactions between parent and child that occur within the microsystem and drive development over time (Bronfenbrenner & Morris, 2006).

**Early Relational Health:** The quality of early parent-child relationships, including secure attachment, emotional availability, and responsive caregiving, which are foundational for long-term emotional and developmental well-being.

**Mindful Parenting:** A parenting approach that incorporates present-moment attention, emotional awareness, non-reactivity, and compassion into the parent-child relationship (Duncan et al., 2009). While not directly measured in this study, this concept informs the theoretical framing.

**Observed Parenting Behaviors:** Parenting actions assessed through structured observation and systematic coding of videotaped parent-infant interactions using a validated coding system. Domains often include warmth, responsiveness, control, and engagement. Observed parenting behaviors are an outcome variable in the current study and are conceptualized as a composite of standardized observational codes capturing warmth, sensitivity, and responsiveness.

**High-Stress Parenting Contexts:** Parenting environments characterized by elevated psychosocial stress due to factors such as poverty, trauma history, systemic inequities, the demands of parenting an infant, or the pressures of raising a child with developmental or behavioral challenges. These contexts may amplify parenting stress and influence the behavioral expression of internal capacities like mindfulness and self-compassion (Bonis, 2016; Hayes & Watson, 2013).

### 1.7.3 Methodology and Context

**Composite Observed Parenting Behavior Score:** A standardized composite derived by averaging z-scores of structured observational ratings of maternal behavior during mother-infant interactions. This score integrates maternal positive affect and interactiveness (reflecting warmth); an aggregated score for guidance and structuring, respect for autonomy, and reverse-coded negative control (representing sensitivity); and contingent responsiveness to infant cues (capturing responsiveness). Higher scores indicate more positive, developmentally supportive parenting behavior.

**Parent-Infant Interaction Observational Coding Manual (P-IIOCM):** A structured observational coding system adapted from validated tools to assess multiple dimensions of parent-infant interaction quality, including responsiveness, warmth, affect, intrusiveness, and control (Lengua et al., n.d.).

**Naturalistic Setting:** A real-world, non-laboratory environment in which parenting behavior is observed with minimal experimental manipulation (Bakeman & Gottman, 1997). This study's observations were conducted in contexts that reflect typical caregiving conditions.

**Ecological Validity:** The extent to which study methods, measures, or findings reflect real-world conditions (Bronfenbrenner, 1977). In this study, observational assessments are valued for their ecological validity, as they capture parenting behavior in realistic interactions.

**Mindfulness-Based Parenting Interventions:** Structured programs designed to cultivate mindfulness, emotional regulation, and attuned caregiving through formal mindfulness practices and parenting skills training (e.g., mindful parenting programs developed by Duncan et al., 2009).

**Reflective Protocols:** Structured or semi-structured opportunities for individuals to review and interpret their own behavior—often through guided discussion or video review—with the goal of increasing self-awareness and promoting alignment between intentions and actions. In parenting research and intervention, reflective protocols may be used to help caregivers bridge the gap between internal states (e.g., mindfulness) and observable behaviors (Fisher et al., 2016).

**Moderators and Mediators:** Statistical constructs used to clarify the nature of relationships between variables (Baron & Kenny, 1986).

**Moderators** affect the strength or direction of an association, indicating for whom or under what conditions a particular effect occurs. For example, parenting stress might moderate the relationship between dispositional mindfulness and observed parenting behavior—such that mindfulness is more strongly associated with responsive caregiving in low-stress contexts, but the relationship weakens or disappears under conditions of high stress.

**Mediators** explain how or why one variable influences another, identifying the mechanism through which the effect occurs. For instance, emotion regulation might mediate the relationship between self-compassion and parenting behavior—meaning that self-compassion leads to improved emotion regulation, which in turn enables more sensitive and responsive caregiving.

**Adverse Childhood Experiences (ACEs):** A standardized index of early life adversity encompassing potentially traumatic events such as abuse, neglect, and household dysfunction. ACEs are commonly used in developmental and public health research to quantify cumulative stress exposure and predict long-term outcomes in health and caregiving (Felitti et al., 1998).

## 1.8 Assumptions and Limitations

### 1.8.1 Assumptions

This study operates under several key assumptions. It assumes that participants completed self-report measures of mindfulness and self-compassion with sufficient honesty and introspective accuracy to reflect their internal experiences. It further assumes that these self-reported constructs are valid reflections of parents' internal states, as supported by prior psychometric research, although not independently validated in this sample, and that they are stable enough over time to meaningfully relate to parenting behavior. The study also assumes that dispositional mindfulness and self-compassion, while overlapping, are empirically and theoretically distinct enough to examine as separate predictors of parenting. It is further grounded in the assumption that these traits are relevant to parenting during the early postpartum period, a connection supported by theoretical and emerging empirical work. Finally, it assumes that the observational coders accurately and reliably assessed parenting behaviors using a validated coding system, and that the structured interactions used for observation captured important aspects of caregiving quality during early infancy.

### 1.8.2 Limitations

Several limitations must be acknowledged. First, the study is correlational and does not permit causal inferences about the influence of mindfulness or self-compassion on parenting behavior, which limits the ability to determine whether these traits directly lead to changes in caregiving. Future research using experimental or longitudinal designs could better establish temporal order and clarify whether these traits actively contribute to changes in parenting behavior over time.

Second, while the study includes observational data, which is a methodological strength, the data were drawn from brief, structured interactions. While these tasks were designed to elicit naturalistic caregiving behaviors, the structured laboratory setting may limit the range of behaviors observed, especially those that occur in more spontaneous or stress-inducing contexts.

Third, the study draws on secondary data from the NEW Moms Connect Study, which focused on low-income, first-time mothers from a single geographic region. While this enhances the study's relevance to underserved populations, it may limit generalizability to broader or more diverse groups, for example, fathers, other caregivers, or parents of children with special needs. Additionally, because all participants voluntarily enrolled in a parenting-focused research study, some degree of selection bias may be present, as those who opt into such studies may differ in meaningful ways (e.g., motivation, stress levels, interest in parenting) from those who do not.

Fourth, although multiple imputation was used to address missing data, the possibility of response or attrition bias cannot be fully ruled out. Participants who discontinue participation or do not complete all measures may differ systematically in ways that influence both self-reports and parenting behavior, potentially affecting study findings.

Finally, mindfulness and self-compassion were measured using standardized instruments developed in Western cultural contexts. These tools may not fully capture how internal strengths are conceptualized or enacted in families from different cultural or linguistic backgrounds, an important consideration when interpreting findings in a racially and ethnically diverse sample. This does not invalidate the measures used but underscores the need to examine how internal traits may be conceptualized and expressed differently across cultures.

### 1.8.3 Conclusion

Despite these limitations, this study makes a unique contribution by integrating self-report and observational data to examine whether internal parent traits are reflected in observed caregiving behavior during early infancy. Its focus on a high-risk, underrepresented population enhances its practical relevance, particularly for informing strengths-based, equity-focused parenting interventions. These contributions highlight several important directions for future research, including the use of longitudinal and experimental designs to examine causal pathways, and the inclusion of broader caregiving roles and family contexts, such as co-parents, extended family members, and parents of children with special needs, who may experience elevated and chronic parenting stress. Future research should also prioritize culturally responsive measurement and intervention approaches, exploring how dispositional mindfulness and self-compassion are differentially expressed and valued across diverse cultural groups, to enhance the relevance and equity of parenting supports.

## 1.9 Organization of the Dissertation

This dissertation is organized into five chapters, each building upon the last to investigate the relationship between internal parent traits and observed caregiving behavior during early infancy.

**Chapter 1** introduces the study by outlining the background, theoretical framework, research questions, study purpose, and significance. It also defines key terms, articulates the study's assumptions and limitations, and provides an overview of the dissertation structure.

**Chapter 2** reviews the theoretical and empirical literature relevant to parenting in early infancy, dispositional mindfulness, and self-compassion. It also discusses mindful parenting as a relational framework, reviews observational approaches to assessing parenting behavior, and explores how internal traits function as predictors of caregiving. The chapter concludes by identifying key gaps in the literature and articulating the rationale for the present study.

**Chapter 3** details the research methodology, including the study design, data source, participant characteristics, procedures, measurement tools, and analytic strategies.

**Chapter 4** presents the study's results, including descriptive statistics, correlations, and findings from regression models examining associations between parent traits and a composite index of observed parenting behaviors.

**Chapter 5** discusses the findings in relation to prior research, highlights theoretical and applied implications, acknowledges assumptions and limitations, and offers recommendations for future research and practice.

# Chapter 2: Literature Review

## 2.1 Introduction

This chapter presents a comprehensive review of the theoretical and empirical literature relevant to dispositional mindfulness, self-compassion, and parenting behaviors during early infancy. The purpose is to establish a conceptual foundation for understanding how internal, modifiable parent traits may relate to caregiving behavior during a critical period of child development. The chapter begins with a discussion of the developmental significance, characteristics, and observable traits of parenting in early infancy. It then reviews empirical evidence of dispositional mindfulness and self-compassion as distinct yet related individual traits, and explores their potential as internal, trait-level predictors of parenting behavior. The concept of mindful parenting is then introduced as a relational framework that integrates these traits into moment-to-moment caregiving interactions, highlighting relevance to the parent-child relationship. The chapter concludes by identifying key gaps in the existing literature and articulating the rationale for the present study. In doing so, this chapter builds the theoretical and empirical justification for investigating whether dispositional mindfulness and self-compassion are reflected in observed parenting behaviors during early infancy.

## 2.2 Parenting in Early Infancy

### 2.2.1 Developmental Significance

The early months of life represent a developmentally sensitive period in which parent-child interactions serve as the foundation for social, emotional, and neurological development. During this time, infants rely on caregivers to meet their physical and emotional needs through consistent, sensitive, and responsive interactions. Such caregiving fosters the development of secure attachment relationships, which in turn support emotional regulation, cognitive growth, and long-term well-being (Calkins, 2007; Fox et al., 2010; National Scientific Council on the Developing Child, 2004), highlighting the central role of parent-child relationships in shaping early outcomes. These repeated, developmentally supportive interactions exemplify proximal processes - the enduring, reciprocal exchanges between parent and child that serve as primary mechanisms of development within Bronfenbrenner's bioecological model (Bronfenbrenner & Morris, 2006). For instance, when a parent consistently responds with warmth and sensitivity to an infant's cues—such as soothing a crying baby—these exchanges help build the infant's capacity for self-regulation and trust, laying the groundwork for later socioemotional development. Given the importance of these early interactions, examining factors within the early caregiving period that may support or shape these foundational processes is essential. Investigating internal, modifiable traits—such as dispositional mindfulness and self-compassion—offers a promising avenue for understanding how caregivers can be supported in fostering early relational health.

### 2.2.2 Characteristics of Early Caregiving

Early infancy represents a unique developmental window in which caregiving demands differ markedly from later stages of childhood. Unlike toddlerhood or adolescence, where verbal communication and behavioral regulation play a larger role, infant caregiving is grounded in highly nonverbal, moment-to-moment interactions. During this stage, parents must continuously interpret subtle cues such as eye gaze, facial expressions, and vocalizations to meet their infants' needs. While these caregiving behaviors can largely be classified into identifiable constructs, it is important to recognize that some parents may encounter cues that are atypical or more difficult to interpret—particularly in the context of special needs or developmental differences (Bonis, 2016), and that expressions of sensitivity and attachment-related behaviors can vary meaningfully across cultural contexts (Keller, 2018; Rothbaum et al., 2000).

In general, parenting behaviors in early infancy can be characterized by warmth, sensitivity, and responsiveness. Warmth refers to the caregiver's expression of positive affect and emotional engagement, often communicated through smiling, affectionate touch, and enthusiastic verbal or nonverbal interaction (Zaslow et al., 2006). Sensitivity involves the caregiver's ability to notice, interpret, and respond appropriately to infant cues in a timely and contingent manner (Ainsworth et al., 1974; NICHD Early Child Care Research Network, 2000). Responsiveness reflects the consistency and appropriateness of the caregiver's reactions to the infant's needs or signals, particularly during moments of distress, uncertainty, or social interaction (Leerkes, 2011). Together, these core caregiving qualities support infants' emerging capacities for self-regulation and social-emotional competence and serve as the behavioral foundation for secure attachment. Inconsistent or intrusive caregiving, by contrast, may disrupt these developmental processes (Calkins, 2007; Fox et al., 2010).

To better understand how these qualities are assessed and situated in developmental research, parenting behavior is often described across multiple levels—from specific practices to broader relational patterns and overarching interaction styles.

At the most granular level, specific practices refer to discrete, observable behaviors that caregivers engage in during interactions with their infants (e.g., praising, comforting, setting limits). For instance, warmth may be expressed through physical affection or verbal praise, while control might involve redirecting or setting clear expectations (Darling & Steinberg, 1993).

At an intermediate level, broader relational dimensions reflect consistent patterns of behavior that shape the emotional tone of interactions over time. These include constructs such as sensitivity—a caregiver’s ability to accurately perceive and respond to infant cues—and intrusiveness, defined as over-controlling or overstimulating behavior. These dimensions are typically derived from aggregating specific practices into meaningful indicators of underlying caregiver capacities (NICHD Early Child Care Research Network, 2000; Zaslow et al., 2006).

At the most general level, parenting behaviors are also categorized into parenting styles, such as authoritative, authoritarian, or permissive. These styles capture caregivers’ overarching approaches to responsiveness and control and are more commonly examined in later developmental periods when parent-child communication becomes increasingly verbal and rule-based (Darling & Steinberg, 1993).

Together, these levels of typology offer a comprehensive framework for understanding parenting behavior in early childhood, from moment-to-moment interactions to more stable caregiving orientations. This multi-tiered framework is especially relevant to observational research, which can help situate specific caregiving behaviors within broader developmental processes and relational patterns (NICHD Early Child Care Research Network, 2000).

### 2.2.3 Observation of Early Parenting Behaviors

Given the developmental significance of early caregiving, observational methods offer a critical lens for assessing how parents engage with their infants in real time. In research contexts, parenting behaviors in early infancy are commonly assessed through direct observation, using standardized tools that code caregiver responses to infant cues. Observational methods provide a more objective and ecologically valid assessment of caregiving quality than self-report, particularly during early infancy when interactions are highly nonverbal (Zaslow et al., 2006).

Observational measures are designed to capture developmentally meaningful dimensions of parenting behavior, such as warmth, sensitivity, and responsiveness—core caregiving constructs supported by research (Zaslow et al., 2006; NICHD Early Child Care Research Network, 2000) and operationalized by coding systems such as the Parent-Infant Interaction Observational Coding Manual (P-IIOCM; Lengua et al., n.d.) used in the NEW Moms Connect Study. These systems translate specific moment-to-moment caregiving behaviors into reliable indicators of broader relational capacities. For example, warmth may be coded through expressions of physical affection (e.g., hugging, caressing), positive tone of voice, or smiling. Sensitivity is often reflected in contingent responding—such as a caregiver recognizing and promptly soothing an infant’s distress or joining attentively in the infant’s play. Responsiveness may be demonstrated by behaviors like following the infant’s lead, offering verbal or physical support in reaction to the infant’s cues, or adapting one’s behavior based on the infant’s engagement level. As a contrast, intrusiveness—a separate construct—may be indicated by behaviors such as interrupting the infant’s activity, overstimulating the child with rapid directives, or physically repositioning the infant without clear cues or need (NICHD Early Child Care Research Network, 2000; Feldman, 2012; Leerkes, 2011).

In the present study, these core caregiving qualities were captured through a composite observed parenting behavior score derived from multiple coded dimensions of mother-infant interaction at 2–4 months postpartum. Specifically, the composite included maternal positive affect and interactiveness (reflecting warmth), an aggregated score for guidance and structuring, respect for autonomy, and reverse-coded negative control (representing sensitive, autonomy-supportive caregiving), and contingent responsiveness to infant cues (capturing responsiveness). These dimensions were drawn from the P-IIOCM and reflect a developmentally grounded and behaviorally anchored index of caregiving quality during early infancy. By integrating these codes into a single composite, the study provides a structured lens for understanding how key qualities like warmth, sensitivity, and responsiveness emerge in real-time interactions—offering insight into the behavioral expression of caregiving capacities that are foundational to infant development.

Observational coding systems like the P-IIOCM are explicitly designed to translate nuanced, real-time caregiving behaviors—such as affective tone, responsiveness, and autonomy support—into aggregated scores that reflect broader relational constructs. This process aligns with longstanding practices in developmental research, where discrete behaviors are systematically organized into developmentally meaningful domains (NICHD Early Child Care Research Network, 2000; Zaslow et al., 2006). These behaviorally grounded scores situate parenting behavior within a dynamic framework that reflects how infants experience caregiving on a moment-to-moment basis, supporting foundational theories of attachment and regulatory development.

Despite these methodological strengths, observational tools remain underutilized in studies linking internal parent traits—such as mindfulness and self-compassion—to caregiving behavior. The existing literature in this area is dominated by parent self-report, which, while valuable for capturing subjective experience, is vulnerable to recall bias and social desirability effects (Zaslow et al., 2006). A small number of studies have employed observational methods, but most have done so within intervention trials (e.g., Coatsworth et al., 2010; Duncan et al., 2009), focusing on changes following structured mindfulness-based programs rather than examining natural, trait-level variation. Consequently, little is known about whether dispositional mindfulness and self-compassion—independent of training—manifest behaviorally in real-time interactions, particularly in naturalistic or semi-naturalistic settings. This imbalance represents a specific methodological gap: the field has numerous self-report studies, a handful of intervention-based observational studies, and very few naturalistic observational studies of trait-behavior links. Moreover, observational methods may be especially valuable in diverse caregiving contexts, such as families navigating cultural variation in parenting norms or elevated stress due to children’s developmental or behavioral challenges, where trait expression may differ meaningfully across environments (Bonis, 2016; Trommsdorff, 2009). Addressing this gap is essential not only for advancing theory on how psychological capacities are enacted in relational contexts, but also for validating internal traits as meaningful targets for parenting interventions.

## 2.3 Dispositional Mindfulness and Self-Compassion

Although dispositional mindfulness and self-compassion are conceptually distinct, they are meaningfully related constructs that often co-occur and interact. Both reflect internal regulatory capacities that support emotional awareness, non-reactivity, and present-moment focus. However, they differ in emphasis: dispositional mindfulness centers on attention and awareness with an attitude of nonjudgmental acceptance (Brown & Ryan, 2003), whereas self-compassion focuses specifically on how individuals relate to themselves during moments of suffering, emphasizing kindness, common humanity, and balanced perspective (Neff, 2003). These differences are theoretically and empirically supported by factor-analytic research demonstrating that, while correlated, mindfulness and self-compassion represent separable constructs with unique predictive utility (Baer et al., 2006; Neff & Dahm, 2015). Including both traits in the present study allows for a more comprehensive understanding of how distinct internal resources may independently or jointly influence early parenting behaviors.

It is important to clarify that dispositional mindfulness and self-compassion are considered trait-level predictors in this study, yet they also demonstrate sensitivity to change. While they reflect relatively stable tendencies across time and situations, they are not fixed characteristics. Evidence from intervention research indicates that these capacities can increase with structured training and supportive contexts (e.g., Duncan et al., 2017; Neff & Germer, 2013). Thus, dispositional mindfulness and self-compassion are best understood as “trait-like but malleable,” capturing enduring individual differences while remaining responsive to targeted interventions. This dual conceptualization justifies their use both in observational studies and as outcomes in intervention trials.

Recognizing dispositional mindfulness and self-compassion as stable yet modifiable constructs underscores their importance as predictors in the present study: they represent enduring individual differences that may influence parenting behaviors, while also offering potential leverage points for future intervention efforts.

### 2.3.1 Dispositional mindfulness

Dispositional mindfulness refers to an individual's relatively stable tendency to bring nonjudgmental awareness to present-moment experiences (Brown & Ryan, 2003). It is considered a trait-like quality that varies across individuals and encompasses attention regulation, emotional awareness, and cognitive flexibility. In contrast to a primarily transient state of mindfulness cultivated through formal practice, dispositional mindfulness reflects a baseline capacity to maintain mindful awareness in daily life.

Dispositional mindfulness is commonly measured using validated instruments such as the Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006), which assesses five key dimensions: observing, describing, acting with awareness, nonjudgment of inner experience, and nonreactivity.

Empirical studies have consistently linked higher dispositional mindfulness to a range of psychological and interpersonal benefits, including reduced stress, improved emotional and attentional self-regulation, and greater relationship satisfaction (Ciesla et al., 2012; Keng et al., 2011). These findings suggest that individuals with higher dispositional mindfulness may be less reactive, more emotionally attuned, and more capable of maintaining presence in relational contexts, capacities particularly relevant in early parenting.

In caregiving contexts, greater dispositional mindfulness has been associated with lower parenting stress and more positive parenting behaviors, such as increased warmth and responsiveness and reduced harshness (Crandall et al., 2015; Parent et al., 2016). These traits may enable parents to remain emotionally available during moments of infant distress or ambiguity and could be especially protective in high-stress contexts. Notably, several of these parenting characteristics, particularly warmth, sensitivity, and responsiveness, are central components of the observational parenting composite used in this study, making dispositional mindfulness a theoretically relevant predictor of the behavioral outcomes examined.

Taken together, these findings suggest that dispositional mindfulness may support the emotional regulation and present-focused attention required for sensitive caregiving, yet more research is needed to examine whether these internal capacities are reflected in observable parenting behaviors. Notably, most existing studies rely on parent self-report, which limits conclusions about how mindfulness manifests in real-time caregiving. The present study addresses this gap by examining the behavioral expression of trait-level mindfulness through direct observation of parent-infant interactions during early infancy.

### 2.3.2 Self-Compassion

Self-compassion refers to the capacity to respond to one's own suffering or perceived inadequacies with kindness, understanding, and recognition that imperfection and struggle are inherent aspects of the shared human experience, rather than with self-criticism or isolation (Neff, 2003). It comprises three interrelated components: self-kindness versus self-judgment, common humanity versus isolation, and mindfulness versus over-identification. Together, these elements cultivate emotional resilience and promote more adaptive responses to stress.

Self-compassion is commonly measured using the Self-Compassion Scale (SCS; Neff, 2003) or its short-form version (SCS-SF; Raes et al., 2011), both of which demonstrate strong reliability and construct validity. Research indicates that self-compassion is strongly associated with a range of psychological benefits, including reduced anxiety and depression, enhanced emotional regulation, and improved well-being (Neff & Germer, 2013).

In the context of parenting, self-compassion has been associated with lower parenting stress, less harsh or reactive parenting, and greater warmth and responsiveness toward children (Gouveia et al., 2016; Moreira et al., 2018). These findings suggest that self-compassion may buffer the negative effects of parenting-related stress and promote sensitive caregiving by supporting emotional availability, patience, and reduced reactivity—qualities that are especially important during the emotionally demanding early postpartum period. Importantly, this aligns with the behavioral constructs examined in the present study, as warmth, sensitivity, and responsiveness serve as key indicators of the parenting quality captured through observational coding.

However, similar to research on dispositional mindfulness, much of the existing literature on self-compassion and parenting is based on parent self-report. Fewer studies have examined whether self-compassion translates into observable parenting behavior, particularly in diverse or high-stress populations, a gap this study seeks to address. Given that parenting stress and caregiving demands are often amplified in contexts of socioeconomic disadvantage or when parenting a child with special needs (Bonis, 2016; Hayes & Watson, 2013), examining the behavioral expression of these internal traits across diverse caregiving settings remains a critical direction for future research.

## 2.4 Trait-Level Predictors of Parenting Behavior

Understanding how upstream traits like dispositional mindfulness and self-compassion influence parenting behavior is essential for advancing both theoretical models and practical interventions. These internal, modifiable traits are theorized to support key aspects of parenting, including emotional regulation, present-focused attention, and reduced reactivity. Such capacities are especially important during the early months of parenting, when infants require attuned, responsive, and consistent caregiving.

Theoretical frameworks, including Chen et al.'s (2017) model of mindful parenting and earlier work by Duncan et al. (2009), propose that internal traits shape parenting through processes such as self-awareness, emotion regulation, attunement, and non-reactivity. Chen et al. (2017) explicitly differentiate intrapersonal (e.g., self-awareness and emotional regulation) and interpersonal (e.g., attunement and non-reactivity in interactions with the child) pathways through which mindfulness-related traits may influence caregiving. For example, a parent with high self-compassion may demonstrate more emotional resilience in the face of infant distress, while a parent high in dispositional mindfulness may be more capable of noticing and sensitively responding to infant cues.

Despite these theoretical connections, empirical evidence remains limited, particularly with respect to observational data. Most existing research on traits related to mindful parenting relies on self-report measures, and few—if any—studies have examined how these traits manifest in directly observed parenting behavior. Furthermore, relatively little research has explored these associations in populations experiencing heightened psychosocial stress, where internal traits may serve a particularly protective function (Garofalo, 2022; Lengua et al., 2023).

Similar gaps exist for other high-stress caregiving contexts, such as families raising children with developmental challenges, which are also underrepresented in this literature (Bonis, 2016; Hayes & Watson, 2013). For parents navigating multiple systemic stressors (e.g., racial discrimination, poverty, ableism) trait-level supports may interact with or be moderated by environmental contexts, a topic warranting further attention.

These gaps highlight the importance of investigating whether internal, modifiable traits associated with mindful parenting translate into observable caregiving behaviors, particularly within diverse and high-stress caregiving contexts. If traits like dispositional mindfulness and self-compassion are indeed reflected in parenting, particularly in behaviorally observable qualities such as warmth, sensitivity, and responsiveness, they could serve as valuable leverage points for prevention and intervention efforts. By examining whether self-reported dispositional mindfulness and self-compassion are associated with observed parenting behaviors in a racially diverse sample of low-income, first-time mothers, the present study addresses this gap. It contributes to validating the behavioral expression of internal traits and enhances understanding of their role in promoting early relational health.

## 2.5 Mindful Parenting

Building on the role of dispositional mindfulness and self-compassion as trait-level predictors of caregiving behavior, mindful parenting offers a relational framework that integrates these internal capacities into moment-to-moment parent-child interactions. Defined by Duncan et al. (2009), mindful parenting encompasses five core dimensions: listening with full attention, emotional awareness of self and child, self-regulation in the parenting relationship, nonjudgmental acceptance of self and child, and compassion for both self and child. These dimensions reflect a shift from cultivating mindfulness as an individual practice to embedding mindful awareness into real-time caregiving exchanges.

Theoretical models of mindful parenting, such as Chen et al.'s (2017) Model of Mindful Parenting's Effects, conceptualize mindful parenting as a relational process shaped by both intrapersonal and interpersonal mechanisms. In this framework, intrapersonal processes such as self-awareness, emotion regulation, and self-compassion, enable parents to remain calm and present, while interpersonal processes such as attunement, non-reactivity, and compassion, support sensitive, responsive engagement with the child. This model situates mindful parenting not only as an extension of individual mindfulness traits, but as a dynamic, relational construct embedded in everyday parent-child interactions. It provides a developmentally sensitive framework for understanding how mindfulness and self-compassion may be enacted in caregiving behavior, particularly in emotionally charged or stressful moments. For example, a parent high in dispositional mindfulness may be better equipped to remain present and attentive during infant distress, while a parent with high self-compassion may more readily extend understanding and patience to both self and child in moments of frustration.

Together, these traits provide the intrapersonal scaffolding upon which the interpersonal dimensions of mindful parenting, such as attuned responding, emotional awareness, and nonjudgmental acceptance, can be built and sustained, particularly during emotionally demanding moments such as infant crying or feeding struggles, when caregiver presence and regulation are especially tested. This conceptual bridge helps explain how enduring internal traits might be expressed behaviorally in early caregiving interactions.

Empirical research has linked mindful parenting to a variety of positive outcomes, including reduced parenting stress, greater warmth, sensitivity, and responsiveness, and lower rates of harsh or reactive behaviors (Burgdorf et al., 2019; Townshend et al., 2021). These observed behaviors reflect core relational qualities that are conceptually aligned with the interpersonal dimensions of mindful parenting, such as attunement, emotional awareness, and compassion. As such, the constructs assessed in the current study—warmth, sensitivity, and responsiveness—represent observable expressions of mindful parenting processes. Mindful parenting has also been associated with improved parent-child communication and better emotional and behavioral functioning in children (de Bruin et al., 2014; Turpyn & Chaplin, 2016).

Although the current study focuses on parents of typically developing infants, mindful parenting has demonstrated relevance across a range of high-stress caregiving contexts. For example, parents of children with developmental or behavioral challenges often experience heightened stress and increased caregiving demands (Bonis, 2016; Hayes & Watson, 2013). In such contexts, mindfulness-based interventions have been shown to reduce psychological distress and enhance parenting efficacy and well-being (Neece, 2014; Benn et al., 2012).

Similarly, self-compassion has emerged as a protective factor, associated with increased resilience and reduced parenting stress (Neff & Faso, 2015). While these findings fall outside the scope of the present sample, they underscore the broader utility of mindful parenting frameworks in high-stress caregiving contexts.

To date, most existing research on mindful parenting relies on parent self-report, leaving open the question of whether self-reported, trait-level mindfulness and self-compassion are reflected in observed caregiving behaviors. This question is especially relevant during early infancy, when interactions are highly physical and nonverbal, and traditional self-report methods may not fully capture the nuances of how caregivers respond to infant cues and needs. The present study helps address this gap by examining whether these internal traits are behaviorally expressed in observed interactions between mothers and their infants during early infancy. In doing so, it contributes to a more behaviorally grounded understanding of mindful parenting and offers new insight into how internal regulatory capacities may be expressed in early caregiving.

## 2.6 Gaps in the Literature

Despite growing research on mindfulness, self-compassion, and parenting, the field remains methodologically imbalanced, with most studies relying on self-report measures and only a small number incorporating observational assessments of caregiving. As discussed, much of the existing literature relies on self-reported measures of both parent traits and parenting behaviors, which are vulnerable to recall bias and social desirability effects. This reliance limits insight into how internal capacities are behaviorally expressed in real-time caregiving, particularly during early infancy, a period characterized by nonverbal, embodied interactions that may require heightened introspective accuracy to report on subtle moment-to-moment behaviors.

Observational studies, which provide a more objective and ecologically valid lens into parenting, remain relatively underutilized in this domain.

Second, few – if any - studies have directly examined whether dispositional mindfulness and self-compassion predict observed parenting behaviors, especially during early infancy—a formative period when parent-child interactions lay the groundwork for attachment, emotional regulation, and neurological development. Even fewer have investigated these associations using data that combine parent-report and observational indicators, which can strengthen conclusions about trait–behavior links. Investigating these associations during this window is critical for understanding how internal traits may support or hinder the development of secure, responsive caregiving relationships. By identifying whether trait-level mindfulness and self-compassion are reflected in observable behaviors, researchers can better evaluate the developmental relevance and practical utility of these traits in early caregiving.

Third, most existing observational research examines parenting outcomes in the context of structured interventions. While this work has provided valuable insights into the potential of mindfulness-based programs to enhance parenting, it limits understanding of how naturally occurring, trait-level variation in mindfulness and self-compassion relates to caregiving behavior. Interventions may temporarily influence parent behavior or activate traits that might not otherwise be expressed in everyday parenting, making it difficult to determine whether observed changes reflect enduring internal capacities or short-term program effects. By analyzing associations across a sample that included both intervention and control group participants, the present study offers a more ecologically valid perspective on how internal traits may operate in everyday parenting contexts.

Fourth, limited attention has been given to these associations within high-stress caregiving contexts. Few studies have examined these relationships in parents of children with developmental or behavioral challenges, despite evidence that these caregivers often experience chronic stress and unique relational demands (Bonis, 2016; Hayes & Watson, 2013). Likewise, low-income, first-time mothers remain underrepresented in both parenting and mindfulness research, despite their increased exposure to psychosocial stress and systemic inequities (Garofalo et al., 2022; Lengua et al., 2023). Caregivers facing elevated psychosocial stress, including those in low-income, first-time parenting contexts, may encounter barriers that affect parenting quality and heighten the relevance of internal traits as potential protective factors, particularly when external supports are limited and stressors are chronic. In such contexts, traits like self-compassion and mindfulness may serve as internal buffers that help sustain emotionally available caregiving despite adversity. Understanding how modifiable traits such as mindfulness and self-compassion function in these diverse, high-stress settings is essential to informing strengths-based, equity-focused interventions.

In addition to these underrepresented populations, limited research has explored how caregiving behaviors, and the internal traits that may support them, are shaped by cultural context. Norms surrounding parenting vary widely across cultural groups, with different communities emphasizing qualities such as interdependence, emotional restraint, or collective caregiving in ways that may not align with Western models of sensitivity or responsiveness (Bornstein, 2012).

Similarly, dispositional traits like mindfulness and self-compassion may be expressed, cultivated, or interpreted differently across sociocultural contexts. For example, self-compassion may be viewed as self-indulgent in some communities, while mindfulness practices may be embedded in spiritual or relational traditions rather than conceptualized as individual traits (Leerkes et al., 2020). These cultural dimensions are often underacknowledged in both the measurement and interpretation of parent traits and behaviors, despite longstanding calls for culturally grounded frameworks in developmental science (e.g., García Coll et al., 1996; Rogoff, 2003). Greater attention to cultural variation is needed to ensure that research in this area does not inadvertently pathologize non-Western parenting practices or misrepresent the expression of internal strengths across diverse populations.

This study directly addresses several of these gaps by examining how self-reported dispositional mindfulness and self-compassion relate to a composite measure of observed parenting behavior in a low-income, racially diverse sample. By integrating parent-report and observational data, it offers a more rigorous and nuanced picture of how internal, modifiable traits may be reflected in real-time caregiving. In doing so, the study contributes methodologically and theoretically to the literature on early relational health - offering a richer understanding of the links between internal traits and caregiving behavior, particularly during early infancy, a period often underrepresented in mindful parenting research.

## 2.7 Summary and Rationale

This chapter reviewed literature on parenting in early infancy, dispositional mindfulness, self-compassion, mindful parenting, observed parenting behavior, and trait-level predictors of parenting behavior. It highlighted evidence linking mindfulness and self-compassion to beneficial outcomes, particularly in terms of emotional regulation and stress buffering, while identifying five areas where research remains limited: (1) the predominance of self-report data in the field, (2) limited research using observational methods, (3) a lack of focus on trait-level predictors and their behavioral correlates, (4) underrepresentation of high-stress parenting populations, and (5) insufficient consideration of cultural variation in how parenting and internal traits are defined, expressed, and measured.

These gaps underscore the importance of studying how internal, modifiable traits such as mindfulness and self-compassion are reflected in observed parenting behavior, particularly in contexts of heightened psychosocial stress. By integrating both parent-report and observational methods, the present study offers a more rigorous and ecologically valid understanding of how these traits manifest during early parenting. By focusing on low-income, first-time mothers, a group often underrepresented in parenting research, this study helps fill a critical gap. Its conceptual and methodological design may also serve as a useful framework for future research across other high-stress caregiving contexts, including families raising children with developmental or behavioral challenges, who also experience elevated stress and remain underrepresented in this literature (Bonis, 2016; Hayes & Watson, 2013). This approach contributes valuable insight into early relational health and informs both theoretical development and practical intervention strategies.

# Chapter 3: Methodology

## 3.1 Introduction

This chapter outlines the methodological approach used to examine whether self-reported dispositional mindfulness and self-compassion are associated with a composite of observed parenting behaviors during early infancy. Utilizing secondary data from the NEW Moms Connect Study, a longitudinal investigation of low-income, first-time mothers and their infants, this study aims to build upon the theoretical and empirical foundations established in the preceding chapters. The chapter details the study design, data source and ethical considerations, participant characteristics, measurement instruments, data collection procedures, and analytic strategies. Together, these elements establish a rigorous framework for addressing the research questions and testing the proposed hypotheses.

## 3.2 Research Design

This study employed a quantitative, correlational design using secondary data from the NEW Moms Connect Study, a longitudinal, mixed-methods investigation of early parenting and infant development among low-income, first-time mothers. The primary aim of the current analysis was to examine associations between self-reported dispositional mindfulness and self-compassion and directly observed parenting behaviors during early infancy.

A correlational design was appropriate given the study's aim to assess naturally occurring relationships between trait-level parent characteristics and caregiving behaviors using secondary data. No variables were manipulated, and the analysis drew on existing data collected through validated self-report instruments and structured behavioral observations. Although the larger NEW Moms Connect Study included both intervention and control groups, the present analysis focused exclusively on trait-behavior associations across the full sample, regardless of group assignment - thus primary regression models were estimated without covariates.

Self-report data were drawn from three timepoints T1(Prenatal - 2nd trimester), T2 (Infant age 2-4 months), and T3 (Infant age 4-6 months) and averaged to establish measurements of trait mindfulness and self-compassion. Observational data were drawn from a single timepoint (T2), when infants were between 2 and 4 months old, representing a developmentally significant period for early caregiving. This secondary analysis facilitated the investigation of theoretically grounded questions within a diverse, high-stress sample frequently underrepresented in parenting research.

### 3.3 Research Questions

This study addresses the following research questions and hypotheses, originally introduced in Chapter 1.

**Research Question 1:**

Are dispositional mindfulness and self-compassion significantly positively correlated?

**Hypothesis 1:**

Dispositional mindfulness and self-compassion will be significantly positively correlated, reflecting their shared foundation in self-regulation and nonjudgmental awareness.

**Research Question 2:**

Are higher levels of dispositional mindfulness associated with more positive observed parenting behaviors?

**Hypothesis 2:**

Dispositional mindfulness will be positively associated with a composite measure of observed parenting behavior—comprising sensitivity, responsiveness, and warmth—such that higher mindfulness corresponds to more positive caregiving interactions.

**Research Question 3:**

Are higher levels of self-compassion associated with more positive observed parenting behaviors?

**Hypothesis 3:**

Self-compassion will be positively associated with a composite measure of observed parenting behavior—comprising sensitivity, responsiveness, and warmth—such that higher self-compassion corresponds to more positive caregiving interactions.

**Research Question 4:**

Do dispositional mindfulness and self-compassion each contribute uniquely to the prediction of observed parenting behavior when modeled together?

**Hypothesis 4:**

Dispositional mindfulness and self-compassion will each account for unique variance in observed parenting behavior when simultaneously entered into a regression model, suggesting their distinct contributions to caregiving behavior.

### 3.4 Data Source

The data for this study were drawn from the NEW Moms Connect Study, a longitudinal investigation conducted by Dr. Liliana Lengua and colleagues at the University of Washington's Center for Child & Family Well-Being. The original study examined how maternal stress, mental health, parenting behaviors, and mindfulness-based interventions influence infant neurobiological and developmental outcomes within the context of socioeconomic adversity.

Participants were recruited from community health clinics, prenatal programs, and public health agencies in the Seattle area. Eligibility criteria included being a first-time mother, aged 18 or older, and experiencing low income. The study emphasized enrolling racially diverse participants, including mothers from backgrounds historically underrepresented in parenting research.

Mothers were randomly assigned to one of three six-week, group-based intervention programs or to a control condition. The programs included:

1. **Prenatal Well-being:** A prenatal childbirth program adapted from the Mindfulness-Based Childbirth and Parenting Program (MBCP, Duncan & Bardacke, 2010; Duncan et al., 2017) that incorporated mindfulness-based stress management and self-care practices to support healthy and positive childbirth experiences.

2. **Postnatal Well-being:** A program for new moms that provided mindfulness-based stress management and self-care practices to ease the transition to being a new parent and support positive connections with their babies.

3. **SEACAP- Infant:** A program for new moms, adapted from the Social, Emotional, and Academic Competence for Children and Parents (SEACAP; Lengua et al., 2021) model, focused on integrating mindfulness and Dialectical Behavior Therapy (DBT) principles—an evidence-based cognitive-behavioral treatment that emphasizes emotion regulation, distress tolerance, and interpersonal effectiveness (Linehan, 1993)—into parenting. The program provided targeted practice to support sensitive, responsive, and consistent parenting and to promote positive parent-infant relationships.

4. **Control Condition:** The control group received two high-quality books about infant development and parenting.

Data were collected at four time points (T1–T4), beginning in the prenatal period and continuing through the first year of infancy. The present study draws on data from the first three time points: T1 (Prenatal - 2nd trimester), T2 (Infant age 2–4 months), and T3 (Infant age 4-6 months). The fourth time point (T4; infant age 10–12 months) was excluded from the present analysis because the NEW Moms Connect Study design did not include the relevant constructs of interest - self-reported mindfulness and self-compassion and observed parenting behavior - at that stage.

The analytic timepoints in this study were determined by the structure of the secondary dataset available at the time of writing. Specifically, self-reported dispositional mindfulness and self-compassion were available at T1, T2, and T3 and averaged to establish a trait measurement, while observed parenting behaviors were coded during semi-structured parent–infant interactions at T2. From a developmental perspective, these timepoints represent meaningful stages in the transition to parenting: T1 reflects prenatal preparation and psychological capacities entering into parenthood (Feldman, 2015); T2 corresponds to the early postpartum period, a sensitive developmental window in which parent–infant interaction patterns and attachment foundations are emerging (Calkins, 2007; National Scientific Council on the Developing Child, 2004); and T3 represents later postpartum functioning, when caregiving routines are more consolidated and infants show clearer socioemotional signals (Feldman & Greenbaum, 1997; Bornstein, 2015). Although the temporal ordering of using T3 self-report measures to predict T2 parenting behaviors was driven by the constraints of the dataset, these timepoints remain theoretically meaningful for examining the relationship between internal parent capacities and observable caregiving behaviors.

The present study draws on data from all participants (N=189) who completed both self-report and observational measures, regardless of intervention condition, to examine trait-behavior associations across the full sample.

### 3.4.1 Ethical Considerations

The NEW Moms Connect Study was approved by the University of Washington's Institutional Review Board (IRB). Participants provided informed consent prior to enrollment, and all procedures were conducted in accordance with ethical guidelines for research involving human subjects. The present study uses de-identified secondary data and was determined exempt from additional IRB review.

## 3.5 Participants

The sample included 189 first-time mothers who were recruited during their second trimester of pregnancy. Mothers' average age was 26.44 (SD = 5.95, range = 18–43). All participants lived at or below 200% of the federal poverty level and reported elevated psychosocial stress and high rates of Adverse Childhood Experiences (ACEs), a standardized index of early life adversity encompassing experiences such as abuse, neglect, and household dysfunction (Felitti et al., 1998). In this sample, 42% (M = 3.13, SD = 2.53) reported four or more ACEs, a threshold often associated with increased risk for poor physical and mental health outcomes. The sample was racially and ethnically diverse, with 34% identifying as African American or Black, 25% as White, 17% as Latinx or Hispanic, 12% as Asian American, 4% as Multiracial, and 2% as Native Hawaiian or Pacific Islander. Additionally, 22% identified as immigrants and 4% as refugees.

Participants were recruited through community organizations and health clinics in a large urban area and provided written informed consent prior to participation. All participants included in the current study completed all requisite self-report and observational measures collected at T1-T3. Mothers were included in the analysis regardless of intervention assignment to ensure the focus remained on trait-level associations with parenting behavior across the full sample.

### 3.6 Procedure

Participants were recruited by and underwent a process of written informed consent with the NEW Moms Connect Study team. Data were collected at four time points (T1–T4), although only data from the first three time points (T1: Prenatal - 2nd trimester, T2: Infant age 2–4 months, and T3: Infant age 4-6 months) were included in this analysis. These time points were selected because they included consistent measurement of self-reported mindfulness and self-compassion, and observational data collection, enabling alignment with the study’s conceptual and analytic goals (see Table 1).

**Table 1***Measures Used at Each Study Timepoint*

<b>Study Timepoint</b>	<b>Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006)</b>	<b>Self-Compassion Scale–Short Form (SCS–SF; Raes et al., 2011)</b>	<b>Parent-Infant Interaction Observational Coding Manual (P-IIOC; Lengua et al., n.d.)</b>	<b>Data Included in Present Study</b>
<b>T1: Prenatal (2nd trimester)</b>	X	X	--	X
<b>T2: Infant age 2–4 months</b>	X	X	X	X
<b>T3: Infant age 4–6 months</b>	X	X	N/A	X
<b>T4: Infant age 10–12 months</b>	--	--	--	--

*Note.* Observational data from T3 was not available at the time of the current study.

Self-report measures of dispositional mindfulness and self-compassion were collected at T1, T2, and T3. Although parent-infant interactions were videotaped and coded at both T2 and T3, only T2 observational data were available for analysis in the present study. Future analyses may incorporate T3 observational data to extend these findings longitudinally. The observational interactions were conducted in a laboratory setting designed to simulate a naturalistic parent-infant environment and included four episodes: naturalistic play, structured play, still-face, and reunion. Trained research staff conducted all assessments, following standardized protocols to ensure procedural consistency across time points. Coders who evaluated the parent-infant interactions were blinded to participants' self-report responses and intervention group assignment to minimize bias.

Participants received monetary compensation for their time: starting with \$90 upon completion of the first assessment, with compensation increasing by \$10 at each subsequent time point. Additional compensation was provided for parking, transportation, and childcare expenses.

## 3.7 Measures

This study utilized three key measures from the NEW Moms Connect Study to examine internal traits and observed caregiving behavior:

### 3.7.1 Dispositional Mindfulness

Dispositional mindfulness was measured at T1, T2, and T3, using the Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006; see Appendix A), a 39-item self-report scale assessing five components of mindfulness: Observing, Describing, Acting with Awareness, Nonjudging of Inner Experience, and Nonreactivity to Inner Experience. Items are rated on a 5-point Likert scale ranging from 1 (never or very rarely true) to 5 (very often or always true). The FFMQ has demonstrated strong internal consistency ( $\alpha = .75-.91$  across facets) and robust convergent validity in diverse adult samples and showed similarly strong reliability in the current dataset ( $\alpha = .81-.85$ ;  $\omega = .82-.85$  across timepoints). A total mean score and facet scores were computed, with higher scores reflecting greater dispositional mindfulness. This measure operationalizes the internal, trait-level mindfulness capacities hypothesized to support caregiving behaviors such as emotional regulation, sensitivity, and attuned responsiveness during early infancy.

### 3.7.2 Self-Compassion

Self-compassion was measured at T1, T2, and T3, using the Self-Compassion Scale–Short Form (SCS–SF; Raes et al., 2011; see Appendix B), a 12-item self-report instrument derived from Neff’s original 26-item Self-Compassion Scale (Neff, 2003). The SCS–SF includes two items from each of the six subscales: Self-Kindness, Self-Judgment, Common Humanity, Isolation, Mindfulness, and Over-Identification. Responses are rated on a 5-point Likert scale from 1 (almost never) to 5 (almost always), with negatively worded items reverse-coded. The SCS–SF has demonstrated good internal consistency in prior research ( $\alpha > .85$ ) and strong correspondence with the full scale ( $r > .97$ ) and showed comparable reliability in the current dataset ( $\alpha = .83$ – $.87$ ;  $\omega = .84$ – $.88$  across timepoints). A total mean score was computed, with higher scores reflecting greater self-compassion. This measure captures self-directed emotional regulation capacities that may buffer parenting stress and promote qualities such as warmth, patience, and emotional availability in parent-infant interactions.

### 3.7.3 Observed Parenting Behaviors

Parenting behavior was assessed using structured observational coding of mother-infant interactions during videotaped sessions conducted at the T2 (2–4 months) laboratory visits. Coding occurred across four episodes: naturalistic play, structured play, still-face, and reunion. Trained coders, blinded to participants’ self-report data and intervention status, rated maternal behavior using the Parent-Infant Interaction Observational Coding Manual (P-IIOC; Lengua et al., n.d.; see Appendix C), which was adapted from existing validated systems (e.g., Cowan & Cowan, 1992; Lindahl & Malik, 2000; Rubin & Cheah, 2000).

Individual behavior codes were assigned for multiple domains, including positive affect, interactiveness, guidance and structuring, respect for autonomy, negative control (reverse coded), and responsiveness. Each domain was rated on a 5-point scale, with higher scores reflecting more positive or developmentally supportive parenting behavior. Strong inter-rater reliability was established through double coding and routine checks, with intraclass correlations exceeding .80 for all scales used in this analysis.

Consistent with conventions in parenting literature (e.g., Leerkes & Crockenberg, 2002; Feldman, 2010; NICHD Early Child Care Research Network, 2000), a theoretically grounded global index of caregiving quality was computed by z-scoring and averaging the parenting behavior dimensions, creating a composite score that aligns with attachment theory and social interaction models which conceptualize parenting as a multidimensional construct best understood through integration of multiple observed behaviors. This measure will be referred to throughout the dissertation as the *composite observed parenting behavior score*.

The current study's composite observed parenting behavior integrates multiple observed maternal behaviors that contribute to early relational health (see Appendix D, Table D1), specifically reflecting three empirically supported domains: warmth - a combined score of positive affect and interactiveness; sensitivity - a combined score of guidance/structuring, respect for autonomy, and reverse-coded negative control; and responsiveness - the mother's ability to respond appropriately and contingently to infant cues. These three overarching dimensions are widely recognized in the literature as central to high-quality caregiving during early infancy (Zaslow et al., 2006; NICHD Early Child Care Research Network, 2000).

### 3.8 Data Analysis Plan

All statistical analyses were conducted using R software (R Core Team, 2023). The following analytic strategy was employed:

1. **Descriptive Statistics:** Calculation of means, standard deviations, and ranges for dispositional mindfulness, self-compassion, and the composite observed parenting behavior score, derived from standardized observational codes capturing warmth, sensitivity, and responsiveness, to characterize the sample and key variables. Descriptive statistics for dispositional mindfulness and self-compassion were also calculated at each available timepoint (T1–T3) to examine construct stability over time.

2. **Correlations:** Pearson correlation coefficients were computed to examine (a) bivariate associations between dispositional mindfulness, self-compassion, and the composite observed parenting behavior score, and (b) longitudinal stability and concurrent associations of mindfulness and self-compassion across timepoints. Significance levels and 95% confidence intervals were reported.

3. **Simple Linear Regression:** Separate regression models were estimated to predict the composite observed parenting behavior score from each predictor variable (dispositional mindfulness and self-compassion) individually.

4. **Multiple Linear Regression:** A combined regression model was conducted to test whether dispositional mindfulness and self-compassion each uniquely contributed to the prediction of the composite observed parenting behavior score when included simultaneously.

An alpha level of .05 was used for significance testing. Linear regression analyses were appropriate given the continuous nature of the composite observed parenting behavior score. Primary regression models were estimated without covariates to test direct trait–behavior associations. Diagnostic checks confirmed that assumptions of normality, linearity, and homoscedasticity were met based on the distribution of residuals.

### 3.8.1 Covariate Considerations

The analytic models were intentionally estimated without covariates such as age, income, or Adverse Childhood Experiences (ACEs), as the primary goal of the study was to examine direct associations between internal parent traits and observed caregiving behaviors. Including demographic or contextual controls could have obscured meaningful variance within this relatively homogeneous sample of low-income, first-time mothers, for whom such factors are integral to the lived context of parenting. Additionally, given the modest sample size ( $N = 189$ ), adding multiple covariates would have reduced statistical power and increased the risk of model overfitting. Likewise, intervention group assignment was not included as a covariate because all participants—across intervention and control conditions—completed identical assessments using the same measures at equivalent timepoints, and because randomization ensured equivalence across groups. The present analyses were designed to test whether trait-level mindfulness and self-compassion were reflected in caregiving behavior across the full sample, rather than to evaluate intervention effects or incremental prediction beyond contextual factors.

This analytic approach also reflects an intentional decision to honor the lived context of the study population rather than treating it as variance to be statistically removed. Participants were intentionally drawn from a relatively homogeneous, high-stress parenting context, where socioeconomic and demographic factors form the backdrop of everyday caregiving. These contextual conditions are not confounds to be controlled but integral elements of the developmental ecology in which mindfulness and self-compassion operate. Examining trait–behavior associations within this shared context allows for interpretation that is both ecologically valid and reflective of the real-world conditions that shape early parenting.

### 3.8.2 Missing Data and Imputation

Missing data were addressed using multiple imputation via predictive mean matching (PMM), implemented with the "mice" package in R (van Buuren & Groothuis-Oudshoorn, 2011). This approach minimizes bias and maintains statistical power under the assumption that data are missing at random (MAR). Five imputed datasets were generated and pooled for analysis, following recommended best practices (Rubin, 1987).

## 3.9 Summary

This chapter described the methodological framework guiding the current study including the research design, sample characteristics, procedures, measurement tools, and analytic strategy. By integrating validated self-report instruments with structured observational methods and applying rigorous statistical techniques, the study examines the relationship between self-reported dispositional mindfulness and self-compassion, and a composite of observed parenting behaviors in a racially diverse, high-stress sample of first-time mothers. The following chapter presents the results of these analyses.

# Chapter 4: Results

## 4.1 Overview

This chapter presents the findings from statistical analyses examining the relationships among self-reported dispositional mindfulness and self-compassion, and observed parenting behaviors. The results include descriptive statistics, longitudinal correlations examining construct stability across timepoints (T1–T3), bivariate correlations among key variables, and regression models that test the study hypotheses. Missing data were addressed via multiple imputation as described in Chapter 3. All analyses were conducted using R software.

## 4.2 Descriptive Statistics

Descriptive statistics for the primary study variables are shown in Table 2. Analyses included all participants with complete data on the key measures (N = 189).

**Table 2**

*Means and Standard Deviations for Key Variables (N = 189)*

<b>Variable</b>	<b>T1 Mean (SD)</b>	<b>T2 Mean (SD)</b>	<b>T3 Mean (SD)</b>	<b>Composite Mean</b>
<b>Dispositional Mindfulness</b>	84.05 (10.77)	85.60 (11.87)	85.06 (13.32)	84.90
<b>Self-Compassion</b>	40.71 (8.92)	42.06 (9.18)	41.53 (9.17)	41.43
<b>Composite Observed Parenting Behavior</b>	--	3.31 (0.57)	--	--

Participants reported moderate to high levels of dispositional mindfulness and self-compassion, relatively stable across timepoints and comparable to published community sample norms (see Appendix E, Table E1). Composite observed parenting behavior scores demonstrated variability across coding dimensions, indicating sufficient dispersion for examining associations.

### 4.3 Bivariate Correlations

Pearson correlation coefficients were calculated to assess longitudinal stability across timepoints, summarized in Table 3, and relationships among key study variables, in Table 4.

**Table 3**

*Pearson Correlations Examining Longitudinal Stability of Key Study Variables (N = 189)*

<b>Variable Pair</b>	<b>r</b>	<b>95% CI</b>	<b>p-value</b>
<b>Mindfulness T1 &amp; Mindfulness T2</b>	.69	[.60, .77]	< .001
<b>Mindfulness T2 &amp; Mindfulness T3</b>	.79	[.72, .85]	< .001
<b>Mindfulness T1 &amp; Mindfulness T3</b>	.61	[.50, .71]	< .001
<b>Self-Compassion T1 &amp; Self-Compassion T2</b>	.70	[.61, .78]	< .001
<b>Self-Compassion T2 &amp; Self-Compassion T3</b>	.86	[.81, .90]	< .001
<b>Self-Compassion T1 &amp; Self-Compassion T3</b>	.65	[.54, .74]	< .001

*Note. Pearson correlations reflect test–retest stability across T1, T2, and T3. Higher values indicate stronger consistency over time. All correlations were significant at  $p < .001$ .*

The correlations demonstrate strong stability in dispositional mindfulness and self-compassion over time. High coefficients indicate that individuals’ relative standing on these constructs remained consistent from pregnancy through six months postpartum, supporting their interpretation as trait-like and relatively stable—while still allowing room for variation. This pattern aligns with prior research showing that these constructs remain temporally stable even during major life transitions such as early parenting.

**Table 4**

*Pearson Correlations Between Key Study Variables (N = 189)*

<b>Variable Pair</b>	<b>r</b>	<b>95% CI</b>	<b>p-value</b>
<b>Mindfulness &amp; Self-Compassion</b>	.78	[.72, .83]	< .001
<b>Mindfulness &amp; Composite</b>	.04	[-.10, .18]	.547
<b>Observed Parenting Behavior</b>			
<b>Self-Compassion &amp; Composite</b>	.01	[-.13, .14]	.917
<b>Observed Parenting Behavior</b>			

These results indicate a strong, significant positive correlation between self-reported dispositional mindfulness and self-compassion. However, neither mindfulness nor self-compassion was significantly correlated with composite observed parenting behavior scores.

#### 4.4 Regression Analyses

Three linear regression models were conducted to examine whether self-reported dispositional mindfulness and self-compassion predicted composite observed parenting behavior scores. Models were estimated without covariates, consistent with the analytic plan. Results are summarized in Table 5.

**Table 5**

*Summary of Linear Regression Analyses Predicting Composite Observed Parenting Behaviors (N = 189)*

<b>Model</b>	<b>Predictor</b>	<b><math>\beta</math></b>	<b>SE</b>	<b>t</b>	<b>p</b>	<b>R<sup>2</sup></b>
<b>Model 1: Mindfulness Only</b>	Mindfulness	.0023	.0039	0.60	.550	.002
<b>Model 2: Self- Compassion Only</b>	Self-Compassion	.0005	.0046	0.10	.920	<.001
<b>Model 3: Combined Model</b>	Mindfulness	.0052	.0062	0.84	.400	.004
	Self-Compassion	-.0048	.0082	-0.59	.560	-

*Note. Regression models are unadjusted and were estimated without covariates, consistent with the analytic plan to examine direct associations between dispositional mindfulness, self-compassion, and observed parenting behaviors.  $\beta$  = unstandardized coefficient.*

None of the regression models reached statistical significance. Self-reported dispositional mindfulness and self-compassion, both individually and combined, did not significantly predict composite observed parenting behaviors. These null findings are visually represented in Appendix F (Figures F1 and F2), which display scatterplots with regression fit lines and 95% confidence intervals.

## 5.4 Summary

The findings of this study indicate a strong, positive correlation between self-reported dispositional mindfulness and self-compassion. However, neither trait significantly predicted composite observed parenting behavior, a multi-dimensional score reflecting warmth, sensitivity, and responsiveness, during early infancy. These null findings suggest that trait-level self-regulation capacities may not directly translate into observable caregiving behaviors, at least within the context and timeframe examined. These results highlight the complexity of linking internal traits to external behaviors and underscore the importance of considering contextual, relational, and methodological factors when evaluating early caregiving dynamics. The following chapter discusses these findings in the context of existing literature and theoretical frameworks, considering possible explanations and implications.

# Chapter 5: Discussion and Conclusion

## 5.1 Introduction

This chapter discusses the findings of the present study, which examined whether self-reported dispositional mindfulness and self-compassion are associated with observed parenting behaviors during early infancy in a diverse, low-income sample. The study aimed to address key gaps in the literature by integrating parent-report and observational methods, focusing on trait-level predictors, and extending research into a high-stress parenting context.

The following sections summarize and interpret the study's key findings, situating them within relevant theoretical models and prior empirical research. This chapter also explores implications for theory and practice, acknowledges the study's strengths and limitations, and provides recommendations for future research.

## 5.2 Summary of Findings

This study addressed four primary research questions regarding the relationships between self-reported dispositional mindfulness and self-compassion, and observed parenting behaviors during early infancy:

**Research Question 1:** Are dispositional mindfulness and self-compassion significantly positively correlated?

→ **Finding:** A strong, statistically significant positive correlation was found between dispositional mindfulness and self-compassion ( $r = .78, p < .001$ ). This result aligns with prior research and supports the hypothesis that these constructs share substantial conceptual and experiential overlap, particularly in domains of self-regulation and nonjudgmental awareness.

**Research Questions 2 and 3:** Are higher levels of dispositional mindfulness (RQ2) or self-compassion (RQ3) associated with more positive observed parenting behaviors?

→ **Finding:** Contrary to expectations, neither dispositional mindfulness nor self-compassion was significantly correlated with a composite measure of observed parenting behavior scores—comprising sensitivity, responsiveness, and warmth.

→ **Finding:** Regression models confirmed that neither variable—examined independently or jointly—significantly predicted composite observed parenting behavior scores.

**Research Question 4:** Do dispositional mindfulness and self-compassion each contribute uniquely to the prediction of observed parenting behavior when modeled together?

→ **Finding:** In the combined regression model, neither dispositional mindfulness nor self-compassion accounted for unique variance in composite observed parenting behavior scores.

Overall, the study confirmed a strong link between mindfulness and self-compassion as interrelated internal traits but did not find evidence that these self-reported qualities predict or correlate with composite observed caregiving behavior in this diverse, high-stress sample during early infancy.

### 5.3 Interpretation of Findings

This study examined whether self-reported dispositional mindfulness and self-compassion were associated with observed parenting behaviors during early infancy in a diverse, low-income sample. The findings offer several insights, both confirming aspects of prior research and highlighting complexities in understanding how internal traits relate to caregiving behavior.

First, the strong positive correlation between dispositional mindfulness and self-compassion is consistent with prior theoretical models and empirical evidence (Neff, 2003; Baer et al., 2006). These constructs are theorized to share common foundations in self-awareness, emotional regulation, and nonjudgmental acceptance (Duncan et al., 2009; Chen et al., 2017), and their observed overlap in this study aligns with this conceptual understanding.

In contrast, the absence of significant associations between these internal traits and observed parenting behaviors diverges somewhat from prior research, which has frequently found positive links between mindfulness, self-compassion, and parenting outcomes (Moreira et al., 2018; Parent et al., 2016). However, a key distinction is that most previous studies have relied on parent self-report measures of parenting behavior rather than behavioral observation. Self-report may capture parents' intentions, perceptions, or ideals regarding their parenting, whereas observational data reflect actual behaviors in specific moments. This discrepancy between self-perceived and externally observed parenting may help explain the null findings and points to an important area for future research.

It is also plausible that the effects of mindfulness and self-compassion on parenting are indirect or context dependent. These traits may influence parenting to different extents under high-stress conditions, in emotionally charged or challenging interactions, or when moderated by factors such as parental mental health or social supports. Observational assessments in this study captured relatively brief and structured interactions, which may not fully reflect the broader range of parenting behaviors where mindfulness and self-compassion might be more evident. Additionally, caregivers may have altered their behavior in response to being observed, potentially limiting the expression of naturalistic parenting behaviors due to social desirability bias or performance effects. This highlights the potential value of future research employing more naturalistic or longitudinal observational methods. This also suggests that the findings may offer indirect insights into understanding parenting under more challenging conditions. For example, in families of children with special needs, where stress, emotional regulation demands, and parenting complexity are heightened, the influence of internal traits such as mindfulness and self-compassion may be more salient or behaviorally observable during different interactions over time and in different situations.

Another consideration is the developmental context. During early infancy, interactions are primarily nonverbal and sensory based (Ainsworth et al., 1974), and the expression of mindfulness or self-compassion may occur in subtle, internalized ways not easily detectable in structured observational contexts. As infants' emotional and behavioral demands evolve, the role of these internal capacities may become more observable across developmental stages - an important consideration for future observational research.

Finally, measurement considerations must be acknowledged. The self-report instruments used in this study were explicitly designed to assess trait-level mindfulness and self-compassion—relatively stable individual tendencies—whereas the observational data captured parenting behavior during brief, structured interactions that may be more reflective of state-dependent or situational behavior. Discrepancies between trait-level internal capacities and behavior expressed in specific moments may contribute to the lack of observed associations. It is possible that repeated observations across a broader range of contexts, or more naturalistic settings, could better illuminate whether and how trait-level mindfulness and self-compassion are reflected in caregiving behavior—an avenue that may hold value for future research on the behavioral expression of these traits.

In sum, while mindfulness and self-compassion remain promising targets for supporting parent well-being, their direct behavioral correlates in early parenting may be shaped by multiple contextual, developmental, and methodological factors. These findings underscore the need for multi-method, longitudinal approaches that capture both internal traits and dynamic caregiving processes across diverse real-world contexts.

## 5.4 Implications

The findings of this study carry several implications for both theory and practice within parenting research, intervention development, and early relational health.

### 5.4.1 Theoretical Implications

This study contributes to refining theoretical models of mindful parenting and advancing understanding of how internal capacities, specifically dispositional mindfulness and self-compassion, may or may not translate into observable parenting behaviors in early infancy. The strong positive correlation between mindfulness and self-compassion is consistent with models that conceptualize these traits as interrelated components of broader self-regulatory capacity (Duncan et al., 2009; Neff & Germer, 2013). However, the lack of significant associations between these self-reported traits and observed parenting behaviors challenges assumptions that these internal capacities are directly or consistently reflected in observable parenting behavior during the early postpartum period.

These findings invite potential refinement of theoretical models of mindful parenting such as Chen et al.'s (2017) framework, which proposes that intrapersonal and interpersonal processes jointly support mindful caregiving. The present results suggest that while mindfulness and self-compassion may be necessary internal resources, they may not be sufficient on their own to predict observable caregiving behavior, especially in the highly physical, nonverbal context of early infancy. For example, the pathways linking internal traits to observable behaviors may be more nuanced, indirect, temporally dynamic (e.g., dispositional mindfulness or self-compassion could affect later, cumulative patterns of parenting behavior rather than reflect concurrent behavioral effects), or context-dependent than previously theorized.

This highlights the need for more systems-oriented models that incorporate mediating and moderating factors—such as stress, developmental timing, interactional context, or relational dynamics—that shape how internal traits are behaviorally expressed.

Future conceptual frameworks may benefit from explicitly modeling indirect and context-dependent pathways. Incorporating developmental timing, interactional context, and situational demands into theoretical models could improve explanatory power and better account for the variability in how internal capacities translate into caregiving behavior.

#### 5.4.2 Practical Implications

The study's findings offer several practical insights for the design, evaluation, and implementation of mindfulness-based parenting interventions, particularly in high-stress caregiving contexts.

First, the absence of observed associations between trait-level mindfulness and self-compassion and observable parenting behaviors highlights the importance of explicitly scaffolding the translation of internal capacities into real-world caregiving. Mindfulness and self-compassion may serve as internal resources, but parents may still require guidance to intentionally apply these capacities in developmentally supportive ways. Interventions could incorporate guided parent-infant interaction exercises, video-based feedback, or post-interaction coaching that explicitly connects internal states to caregiving behaviors. The Filming Interactions to Nurture Development (FIND) program (Fisher et al., 2016), which uses video review and strengths-based coaching to promote sensitive caregiving, offers a promising model for this type of reflective integration.

Adapted for mindfulness-based interventions, such approaches could facilitate parents' integration of internal experiences with observable behaviors in developmentally supportive ways.

Second, the null findings underscore the importance of using multiple measurement modalities when evaluating intervention outcomes. Sole reliance on parent self-report may overestimate the extent to which internal mindfulness or self-compassion translates into caregiving behavior, particularly in early infancy when interactions are subtle, predominantly nonverbal, and context dependent. Future evaluations of mindfulness-based parenting programs could benefit from pairing observational assessments with contemporaneous self-report at the time of observation, allowing researchers and practitioners to better understand how parents' perceptions of their internal capacities align—or do not align—with their real-time caregiving behaviors across different contexts and levels of stress, offering a more complete and ecologically valid picture of how mindfulness-based parenting interventions influence actual parent-infant interactions.

Third, these findings highlight the value of applying an equity lens in parenting intervention research. Families experiencing heightened psychosocial stress—such as those in this sample—may face contextual barriers (e.g., chronic stress, systemic inequities, limited support) that constrain the behavioral expression of mindfulness and self-compassion, even when internal capacities are present. Understanding the conditions under which these traits serve as protective factors, and when they may not, can inform the development of more responsive, culturally sensitive, and strengths-based supports.

Reflective components such as post-interaction debriefing or guided reflection interviews could enable parents to bridge the gap between intention and behavior, particularly in high-stress contexts where automatic responses may otherwise override mindful intentions. Such supports may also be particularly beneficial for caregivers managing complex parenting demands, including those raising children with developmental disabilities, who often face elevated stress and may benefit from tailored strategies to apply mindfulness and self-compassion in daily caregiving (Hayes & Watson, 2013).

Finally, the insights from this study extend to the early childhood education workforce. Educators, much like parents, operate in high-stress, relational contexts that require emotional regulation, perspective-taking, and reflective responsiveness. Embedding mindfulness and self-compassion practices into workforce development and coaching models could strengthen educators' capacity to remain present, responsive, and emotionally available in classroom interactions. Doing so may not only enhance teacher well-being but also improve the quality of interactions that form the foundation of children's social and emotional learning.

## 5.5 Limitations

While this study contributes valuable insights regarding the relationship between internal parent traits and observed caregiving behaviors, several limitations should be acknowledged to guide interpretation of the findings.

First, the study examined associations between parent self-reported mindfulness and self-compassion and observed parenting behaviors using cross-sectional data drawn from a single developmental window (early infancy). This limits inferences about how these associations may change over time or across developmental stages. Longitudinal designs could assess whether these internal traits become more behaviorally salient as children grow and parenting demands evolve.

Second, the observational assessments captured relatively brief, semi-structured interactions in a laboratory setting. While these tasks were designed to elicit naturalistic caregiving behaviors, they may not fully reflect the breadth and variability of parenting practices that occur in daily life, particularly during unstructured or high-stress moments when self-regulatory capacities may be more relevant or behaviorally expressed.

Third, the study was constrained by the timing and sequencing of measures in the secondary dataset. Self-report data on dispositional mindfulness and self-compassion were collected at T1 (prenatal, 2nd trimester), T2 (infant age 2–4 months), and T3 (infant age 4–6 months), while observed parenting behaviors were coded during semi-structured parent–infant interactions at T2. This design provided self-report data both before, during, and after the observational assessment, which were averaged to create a more stable estimate of trait-level mindfulness and self-compassion. However, this approach also meant that self-report data collected after the T2 observation were incorporated into the composite, complicating interpretation of the temporal direction between traits and observed behaviors.

This ordering reflects the constraints of the dataset rather than a theoretical preference. While this limits causal inference, the timepoints nonetheless capture developmentally meaningful phases: T2 represents early postpartum caregiving interactions when relational patterns are emerging, and T3 reflects later postpartum functioning when parental capacities may be more established (Calkins, 2007; Feldman & Greenbaum, 1997). Future research should align trait and observational measures more closely with developmental sequencing to clarify how internal capacities are expressed in caregiving behaviors over time.

Fourth, measurement considerations should be noted. The study relied on self-reported trait-level indicators of mindfulness and self-compassion, which may not fully capture the moment-to-moment internal states experienced during caregiving. In dynamic parenting contexts, factors such as situational stress, fatigue, or emotion regulation demands may override or obscure a parent's typical trait disposition, potentially contributing to a disconnect between self-reported traits and observed behavior. Additionally, while the Self-Compassion Scale–Short Form demonstrates strong psychometric properties, its intentional brevity may limit its sensitivity to the nuanced ways self-compassion is enacted in parenting (e.g., guilt, frustration, embodied stress in parenting), particularly in high-stress contexts.

Finally, it is important to note that the analytic design intentionally focused on the lived realities of this sample rather than statistically controlling for them. Participants were drawn from a relatively homogeneous, high-stress caregiving population in which socioeconomic and demographic conditions are inseparable from the parenting experience. Treating these factors as statistical controls would have reduced ecological validity by abstracting the data from the very context in which mindfulness and self-compassion are most relevant. This focus strengthens interpretation within this underrepresented group but also limits the extent to which findings can be generalized to broader or more socioeconomically diverse parenting populations.

Despite these limitations, the study advances the literature by integrating self-report and observational data to examine trait–behavior associations in a socioeconomically diverse sample during early infancy. It provides a strong foundation for future work that can explore these relationships longitudinally, across contexts, and with attention to cultural and situational variation in parenting.

## 5.6 Future Direction

The findings of this study suggest several directions for future research aimed at refining theoretical models, improving measurement strategies, and broadening the practical relevance of mindfulness- and self-compassion–based interventions in early parenting contexts.

First, the null associations between self-reported internal traits and observed parenting behaviors reinforce the importance of exploring indirect pathways. Prior research suggests that dispositional mindfulness and self-compassion may influence parenting outcomes indirectly through mediators such as parental emotion regulation, stress, and mental health (Gouveia et al., 2016; Moreira et al., 2018).

Future studies could test these mechanisms using both behavioral observation and self-report, integrating multi-method designs to clarify how these internal traits manifest in behavior. For example, interventions could explore whether improvements in emotion regulation or reductions in stress mediate observable changes in parenting behavior over time, helping to bridge the gap between internal capacities and their behavioral expression in caregiving contexts. Moderators such as social support, environmental adversity, or cultural parenting norms may also shape the strength or visibility of these associations (Luthar & Eisenberg, 2017; Trommsdorff, 2009). Incorporating naturally occurring moderated mediation models might better reflect the socioecological complexity of caregiving.

Second, future research would benefit from longitudinal designs that examine how relationships between internal traits and parenting behavior evolve over time. The current study focused on a single developmental period—early infancy—when interactions are highly nonverbal and physical. It remains unknown whether mindfulness and self-compassion become more observable in parenting behavior as children develop greater emotional and communicative complexity. Future work could assess whether the influence of these traits becomes more apparent at later developmental stages, particularly in emotionally charged or cognitively demanding caregiving situations. Future research could also continue to refine the developmental alignment of measurement timepoints. In the present study, self-report data were collected both before and after the observed parenting assessment due to the structure of the secondary dataset. Although this approach captured meaningful phases of early parenting—from prenatal preparation through the consolidation of postpartum routines—it also limited inferences about directionality.

Longitudinal designs that align trait and behavioral measures across consecutive developmental stages could better clarify how mindfulness and self-compassion capacities evolve and are expressed in caregiving behavior over time.

Third, future studies might consider disaggregating composite scores from both self-report and observational measures. Trait-level constructs such as mindfulness and self-compassion are multidimensional, and exploring associations at the facet level—for example, whether the "nonreactivity" facet of mindfulness or the "common humanity" subscale of self-compassion uniquely relate to specific observed parenting behaviors—could clarify whether specific components of mindfulness or self-compassion are more behaviorally salient than others in parenting contexts. Similarly, parsing observational coding into discrete parenting behaviors within domains (e.g., warmth, intrusiveness, responsiveness) could help clarify which aspects of caregiving are most influenced by particular internal traits. This facet-level analysis may yield more granular insights into how self-regulatory capacities are enacted in real-time parenting.

Fourth, extending this line of research to other high-stress parenting populations such as parents of children with developmental, behavioral, or medical challenges could enhance its practical and equity-focused relevance. These families often experience elevated and chronic parenting stress, which may alter the manifestation of internal traits or increase the need for protective factors (Hayes & Watson, 2013; Bonis, 2016). Studying whether mindfulness and self-compassion are reflected in observable parenting behaviors under such conditions could enhance design of targeted, strengths-based interventions that support both parent and child well-being.

Fifth, although the present study combined data across intervention and control participants to examine overall trait–behavior associations, future research should consider testing whether participation in mindfulness-based or parenting interventions moderates these relationships. It is possible that intervention exposure could temporarily enhance or attenuate the link between internal traits and observed caregiving behaviors by activating mindfulness or self-compassion skills in ways not fully captured through trait measures. Examining group differences or longitudinal intervention effects could clarify whether the associations observed here reflect enduring individual tendencies or contextually influenced expressions of mindfulness and self-compassion in parenting.

Future research could also explore whether dispositional mindfulness and self-compassion enhance the effectiveness of parenting or mindfulness-based interventions themselves. Individuals with higher baseline levels of these traits may engage differently with intervention content, leading to more pronounced or sustained behavioral change. Examining these potential moderating effects would extend understanding of how internal capacities interact with external supports to influence parenting outcomes and may help identify which parents are most likely to benefit from specific intervention approaches.

Additionally, although the present analyses intentionally estimated trait–behavior associations without adjusting for demographic or contextual variables, future research could examine whether these relationships remain consistent when accounting for factors such as age, income, or intervention participation. Larger and more heterogeneous samples would allow for inclusion of such covariates without compromising model stability, providing a clearer picture of whether trait–behavior associations persist across diverse populations and contexts.

In particular, exploring whether intervention exposure amplifies or attenuates these associations could clarify how internal capacities interact with external supports to influence caregiving behavior.

Finally, integrating reflective protocols into both research and intervention designs may offer new tools for bridging the gap between internal experience and observed behavior. For example, brief video-based feedback sessions, modeled on programs such as the Filming Interactions to Nurture Development (FIND) program (Fisher et al., 2016), could support parents in identifying links between their internal experiences and caregiving behaviors. Such approaches may illuminate trait–behavior disconnects and foster greater alignment between trait-level capacities and caregiving behavior through intentional reflection and strengths-based coaching—especially for parents navigating chronic stress or limited support.

Despite null findings, this study contributes to the literature by emphasizing the importance of multi-method designs in parenting research and cautioning against exclusive reliance on self-report data. It also highlights the need to account for indirect pathways and contextual moderators (e.g., stress, social support, cultural parenting norms, and parent mental health) that may shape how internal traits are translated into caregiving practice. Future research should prioritize longitudinal, ecologically valid approaches; disaggregate trait and behavioral components for more precise analysis; and include diverse and underrepresented populations, such as parents of children with developmental or behavioral challenges. Additionally, intervention research should explore how reflective tools and strength-based feedback can help parents more effectively align internal regulatory capacities with real-time parenting behaviors, especially in high-stress contexts.

## 5.7 Conclusion

This study explored whether self-reported dispositional mindfulness and self-compassion were associated with observed parenting behaviors during early infancy in a racially diverse, high-stress sample. Consistent with prior research, mindfulness and self-compassion were strongly positively correlated, reflecting their shared foundation in self-regulation and nonjudgmental awareness. However, contrary to hypotheses, neither trait significantly predicted observed parenting behaviors in semi-structured mother-infant interactions. These findings challenge assumptions that internal dispositions translate directly into externally observable parenting behaviors, particularly in the subtle, physically grounded interactions of early infancy.

The results highlight the value of using multi-method approaches that pair self-report with observational data, and the need for nuanced models that account for indirect, context-dependent, and developmentally situated pathways. They also underscore the significance of culturally and contextually sensitive designs in both research and intervention.

By focusing on first-time mothers navigating caregiving under stress, this study contributes to equity-informed understandings of parenting strengths and constraints. Ultimately, the findings call for continued refinement of mindful parenting theory and innovation in intervention strategies—toward approaches that support caregivers in cultivating internal resources and effectively applying them in real-time, responsive caregiving.

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## Appendix A

### Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006)

This appendix includes the Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006), a 39-item self-report scale assessing five components of mindfulness: Observing, Describing, Acting with Awareness, Nonjudging of Inner Experience, and Nonreactivity to Inner Experience. Items are rated on a 5-point Likert scale ranging from 1 (never or very rarely true) to 5 (very often or always true). A total mean score and facet scores were computed, with higher scores reflecting greater dispositional mindfulness. This measure operationalizes the internal, trait-level mindfulness capacities hypothesized to support caregiving behaviors such as emotional regulation, sensitivity, and attuned responsiveness during early infancy.

The following pages include the FFMQ. Formatting reflects the original measure.

### Five Facet Mindfulness Questionnaire (FFMQ)

Ruth A. Baer, Ph.D.

University of Kentucky

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**Please rate each of the following statements using the scale provided. Write the number in the blank that best describes your own opinion of what is generally true for you.**

1	2	3	4	5
never or very rarely true	rarely true	sometimes true	often true	very often or always true

- \_\_\_\_ 1. When I'm walking, I deliberately notice the sensations of my body moving.
- \_\_\_\_ 2. I'm good at finding words to describe my feelings.
- \_\_\_\_ 3. I criticize myself for having irrational or inappropriate emotions.

- \_\_\_ 4. I perceive my feelings and emotions without having to react to them.
- \_\_\_ 5. When I do things, my mind wanders off and I'm easily distracted.
- \_\_\_ 6. When I take a shower or bath, I stay alert to the sensations of water on my body.
- \_\_\_ 7. I can easily put my beliefs, opinions, and expectations into words.
- \_\_\_ 8. I don't pay attention to what I'm doing because I'm daydreaming, worrying, or otherwise distracted.
- \_\_\_ 9. I watch my feelings without getting lost in them.
- \_\_\_ 10. I tell myself I shouldn't be feeling the way I'm feeling.
- \_\_\_ 11. I notice how foods and drinks affect my thoughts, bodily sensations, and emotions.
- \_\_\_ 12. It's hard for me to find the words to describe what I'm thinking.
- \_\_\_ 13. I am easily distracted.
- \_\_\_ 14. I believe some of my thoughts are abnormal or bad and I shouldn't think that way.
- \_\_\_ 15. I pay attention to sensations, such as the wind in my hair or sun on my face.
- \_\_\_ 16. I have trouble thinking of the right words to express how I feel about things
- \_\_\_ 17. I make judgments about whether my thoughts are good or bad.
- \_\_\_ 18. I find it difficult to stay focused on what's happening in the present.
- \_\_\_ 19. When I have distressing thoughts or images, I "step back" and am aware of the thought or image without getting taken over by it.
- \_\_\_ 20. I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing.
- \_\_\_ 21. In difficult situations, I can pause without immediately reacting.
- \_\_\_ 22. When I have a sensation in my body, it's difficult for me to describe it because I can't find the right words.
- \_\_\_ 23. It seems I am "running on automatic" without much awareness of what I'm doing.
- \_\_\_ 24. When I have distressing thoughts or images, I feel calm soon after.
- \_\_\_ 25. I tell myself that I shouldn't be thinking the way I'm thinking.
- \_\_\_ 26. I notice the smells and aromas of things.

- \_\_\_\_ 27. Even when I'm feeling terribly upset, I can find a way to put it into words.
- \_\_\_\_ 28. I rush through activities without being really attentive to them.
- \_\_\_\_ 29. When I have distressing thoughts or images I am able just to notice them without reacting.
- \_\_\_\_ 30. I think some of my emotions are bad or inappropriate and I shouldn't feel them.
- \_\_\_\_ 31. I notice visual elements in art or nature, such as colors, shapes, textures, or patterns of light and shadow.
- \_\_\_\_ 32. My natural tendency is to put my experiences into words.
- \_\_\_\_ 33. When I have distressing thoughts or images, I just notice them and let them go.
- \_\_\_\_ 34. I do jobs or tasks automatically without being aware of what I'm doing.
- \_\_\_\_ 35. When I have distressing thoughts or images, I judge myself as good or bad, depending what the thought/image is about.
- \_\_\_\_ 36. I pay attention to how my emotions affect my thoughts and behavior.
- \_\_\_\_ 37. I can usually describe how I feel at the moment in considerable detail.
- \_\_\_\_ 38. I find myself doing things without paying attention.
- \_\_\_\_ 39. I disapprove of myself when I have irrational ideas.

### **FFMQ Scoring instructions**

For all items marked "R" the scoring must be reversed. Change 1 to 5, 2 to 4, 4 to 2, and 5 to 1 (3 stays unchanged). Then sum the scores for each subscale.

#### **Observing**

1, 6, 11, 15, 20, 26, 31, 36

#### **Describing**

2, 7, 12R, 16R, 22R, 27, 32, 37

**Acting with awareness**

5R, 8R, 13R, 18R, 23R, 28R, 34R, 38R

**Nonjudging of inner experience**

3R, 10R, 14R, 17R, 25R, 30R, 35R, 39R

**Nonreactivity to inner experience**

4, 9, 19, 21, 24, 29, 33

## **Appendix B**

### **Self-Compassion Scale–Short Form (SCS–SF; Raes et al., 2011)**

This appendix includes the Self-Compassion Scale–Short Form (SCS–SF; Raes et al., 2011), a 12-item self-report instrument derived from Neff’s original 26-item Self-Compassion Scale (Neff, 2003). The SCS–SF includes two items from each of the six subscales: Self-Kindness, Self-Judgment, Common Humanity, Isolation, Mindfulness, and Over-Identification. Responses are rated on a 5-point Likert scale from 1 (almost never) to 5 (almost always), with negatively worded items reverse-coded. A total mean score was computed, with higher scores reflecting greater self-compassion. This measure captures self-directed emotional regulation capacities that may buffer parenting stress and promote qualities such as warmth, patience, and emotional availability in parent-infant interactions.

The following pages include the SCS–SF. Formatting reflects the original manual.

Running head: SELF-COMPASSION SCALE–Short Form (SCS–SF)

To Whom it May Concern:

Please feel free to use the Self-Compassion Scale – Short Form in your research (12 items instead of 26 items). The short scale has a near perfect correlation with the long scale when examining total scores. We do not recommend using the short form if you are interested in subscale scores, since they’re less reliable with the short form. You can e-mail me with any questions you may have. The appropriate reference is listed below.

Best wishes,

Kristin Neff, Ph. D.

e-mail: [kristin.neff@mail.utexas.edu](mailto:kristin.neff@mail.utexas.edu)

Reference:

Raes, F., Pommier, E., Neff, K. D., & Van Gucht, D. (2011). Construction and factorial validation of a short form of the Self-Compassion Scale. *Clinical Psychology & Psychotherapy*. 18, 250-255.

Coding Key:

Self-Kindness Items: 2, 6

Self-Judgment Items: 11, 12

Common Humanity Items: 5, 10

Isolation Items: 4, 8

Mindfulness Items: 3, 7

Over-identified Items: 1, 9

Subscale scores are computed by calculating the mean of subscale item responses. To compute a total self-compassion score, reverse score the negative subscale items - self-judgment, isolation, and over-identification (i.e., 1 = 5, 2 = 4, 3 = 3, 4 = 2, 5 = 1) - then compute a total mean.

## HOW I TYPICALLY ACT TOWARDS MYSELF IN DIFFICULT TIMES

Please read each statement carefully before answering. To the left of each item, indicate how often you behave in the stated manner, using the following scale:

<b>Almost never</b>					<b>Almost always</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	

\_\_\_\_ 1. When I fail at something important to me I become consumed by feelings of inadequacy.

\_\_\_\_ 2. I try to be understanding and patient towards those aspects of my personality I don't like.

\_\_\_\_ 3. When something painful happens I try to take a balanced view of the situation.

\_\_\_\_ 4. When I'm feeling down, I tend to feel like most other people are probably happier than I am.

\_\_\_\_ 5. I try to see my failings as part of the human condition.

\_\_\_\_ 6. When I'm going through a very hard time, I give myself the caring and tenderness I need.

\_\_\_\_ 7. When something upsets me I try to keep my emotions in balance.

\_\_\_\_ 8. When I fail at something that's important to me, I tend to feel alone in my failure

\_\_\_\_ 9. When I'm feeling down I tend to obsess and fixate on everything that's wrong.

\_\_\_\_ 10. When I feel inadequate in some way, I try to remind myself that feelings of inadequacy

are shared by most people.

\_\_\_\_ 11. I'm disapproving and judgmental about my own flaws and inadequacies.

\_\_\_\_ 12. I'm intolerant and impatient towards those aspects of my personality I don't like.

## Appendix C

### Parent-Infant Interaction Observational Coding Manual

This appendix includes a description of, and coding excerpts from, the Parent-Infant Interaction Observational Coding Manual (P-IIOCM; Lengua et al., n.d.), the tool used to assess parenting behavior. In the present study, a theoretically grounded global index of caregiving quality was computed by z-scoring and averaging the parenting behavior dimensions, creating a composite score that aligns with attachment theory and social interaction models which conceptualize parenting as a multidimensional construct best understood through integration of multiple observed behaviors. The composite observed parenting behavior integrates multiple observed maternal behaviors that contribute to early relational health, specifically reflecting three empirically supported domains: warmth - a combined score of positive affect and interactiveness; sensitivity - a combined score of guidance/structuring, respect for autonomy, and reverse-coded negative control; and responsiveness - the mother's ability to respond appropriately and contingently to infant cues.

The following pages include selected excerpts from the P-IIOCM coding manual.

Formatting reflects the original manual.

#### **PARENT-INFANT INTERACTION OBSERVATIONAL CODING MANUAL: OVERVIEW**

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The Parent-Infant Interaction Observational Coding Manual aims to guide the coding of parent-child interactions between mothers and their infants (ages 2 months – 5 months). Use of this system allows for the coding of maternal behaviors across several domains, including positive affect, negativity, degree of interactiveness and maternal responsiveness, and parental control behaviors.

Implementation of this coding system requires extensive training and coders must achieve 90% agreement with the criterion before moving onto individual coding. Training occurs in highly structured training sessions and in the following order: (1) familiarization with the tasks, (2) background in infant development and parenting behaviors appropriate to the developmental period, (3) extensive explanation

and training with each individual code, (4) review tapes coded by the authors to achieve an understanding of how to implement the system, (5) group coding of tapes with discussion of the decision making used, (6) individual coding of selected tapes in order to test adherence and knowledge of the system.

The task:

Contains 4 episodes.

- (1) Naturalistic play – 3 minutes. Prior to being hooked up to physio equipment, the mother is instructed to play with her infant as she normally would.
- (2) Free play – 2 minutes. With baby in seat and while both are hooked up to physio equipment, mother is instructed to play with her infant as she normally would
- (3) Still face – up to 2 minutes. Mother is asked to adopt a neutral face and not respond to the bids of her infant.
- (4) Reunion – 5 minutes. Mother is instructed to resume normal interactions with her infant.

**Instructions:** Coding should be done from videotaped recordings of interaction tasks. Prior to coding, the episode should be previewed in its entirety. The tasks are to be coded in 30-second epochs with each segment receiving a score on each code. The score for each segment is recorded on the coding sheet.

Codes are determined by the frequency of the behavior, the intensity of the behavior, and/or the combination of the two. The coding system ranges from 0 – none of the behavior was expressed, to 5 – the behavior was expressed frequently, intensely, or both.

## **POSITIVE AFFECT: PARENT CODE**

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This code assesses the positive quality of the parent emotional expressiveness towards her infant. Positivity includes the individual's tone of voice, facial expressions, and body language and will be coded on a scale from little to no positive affect expressed to much positive affect expressed. Positive affect may be expressed through behaviors such as affection (verbal or physical), laughter that indicates enjoyment of the interaction with the infant, statements of praise or compliments, and smiling (or other positive facial expressions). The lower end of this scale is characterized by an absence of positive affect behaviors. However, this does not mean that the individual is necessarily expressing negative affect. In fact, an individual who expresses little affect at all (i.e., unemotional, flat affect) will score low on both positive and negative affect. At the higher end, the parent shows an easy, relaxed manner, appears to enjoy the other, and may laugh, smile, or be affectionate.

Score the parent according to the following:

**0- None.** The parent expresses no positive affect, maintaining a flat, neutral, or negative demeanor throughout the segment. The parent never seems to be enjoying the interaction and is not engaging with the other individual. The parent is distressed, disinterested, bored, disengaged, or withdrawn the entire segment. No indications of positive affect are expressed (e.g., no smiling, no laughter, no compliments, no affection, no praise). The person may appear visibly sad or depressed. The person may appear withdrawn in their demeanor, including visibly leaning away from the other person, or physically moving away from the individual with the intention of creating space.

**1- Very Low.** The parent expresses very little positive affect, maintaining a flat, neutral, or negative demeanor for most of the interaction. The parent very rarely seems to really be enjoying the interaction. Few smiles (or other forms of nonverbal positivity) are displayed, and the parent in general does not seem relaxed. The parent often seems distressed, disinterested, bored, disengaged, or withdrawn from the interaction. A code of 1 is assigned if the parent expresses low-level positive affect (smiling, laughter, affection, praise, comfort, warmth, positive tone of voice) briefly during the interaction. The positive affect should be short lived.

**2- Low.** The parent expresses some positive affect, showing brief periods of enjoyment, but this is not the parent's general state. It may seem to take a fair amount of effort on the part of the other person to make the parent smile or display positivity. The parent may at times seem neutral, disinterested, bored, disengaged, or withdrawn from the interaction.

**3- Moderate.** The parent expresses a moderate amount of positive affect and is able to display some enjoyment of the interaction. The parent may be neutral for some portions of the interaction (such as seeming disinterested, bored, disengaged, and/or withdrawn) but will smile, laugh, speak in a positive tone of voice, or be affectionate for about half of the segment. A score of 3 should be assigned if the parent expresses positive affect that is moderate in intensity (e.g., the parent uses pet names when speaking to the infant) even if it does not characterize his/her general state.

**4- Moderately High.** The parent expresses frequent positive affect (e.g., smiles, is affectionate and warm, and seems comfortable, relaxed, and at ease in the play). That is, she expresses frequent warmth, affection, smiling, positive tone of voice, and/or compliments. There may be occasional moments of mild frustration, disinterest, boredom, disengagement, or withdrawal from the interaction. There is an underlying sense of warmth, connection, and comfort between the parent and the infant. A code of 4 may also be assigned if there is a moderate to high intensity of the positive affect, even if it does not occur frequently.

**5- High.** The parent expresses a great deal of positive affect (e.g., smiles, is affectionate and warm, consistently speaks in a positive tone, and seems comfortable, relaxed, and at ease in the play). The parent seems to enjoy being with the infant. The parent seems relaxed most of the time. There is an underlying sense of warmth, connection, and comfort. A code of 5 should be assigned if positive affect is expressed frequently and is of higher intensity. For example, showing excitement and enthusiasm during the interaction, or telling the infant "I love you." Those coded as a "5" will display verbal warmth and affection (e.g., compliments, laughter) and/or nonverbal warmth and affection (e.g., smiling, hugging, closeness to the other individual). The positiveness does not need to be constant, but rather characterize the majority of the segment.

## **NEGATIVITY, REJECTION, & INVALIDATION: PARENT CODE**

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This is primarily a content code based on the frequency and intensity with which an individual makes expressive verbal and nonverbal behavior that is negative, dismissive, invalidating, and/or hostile toward the other individual. Both verbal and nonverbal behaviors are considered in order to capture the overall negative tone expressed by the individual.

Negativity, rejection, and invalidation expressed verbally include making cruel, critical, insulting, blaming, unkind, rude, or insensitive statements, speaking in a raised voice or yelling, expressing negative sarcasm, impatience, annoyance, speaking with an abruptness, or an edge to one's voice. In addition, it captures parental behaviors that are dismissive or invalidating of the infant's feelings. For example, a parent telling an infant to stop feeling sad, upset, or scared. Nonverbal behaviors captured by this code include facial expressions that convey irritation or annoyance (e.g., frowns, scowls, teeth clenched, eye rolling, smirking), body language (e.g., crossed arms, stiffness, fidgetiness) physical redirecting that is harsh (e.g., grabbing the infant's arm) and/or physically attacking the other individual (e.g., parent hits the infant).

This code assesses the overall level of rejection and/or invalidation expressed. At the lowest end of the scale, the individual neither rejects nor invalidates the other person. At the top end of the scale, the individual is clearly both rejecting and invalidating. Therefore, it is important to consider both the content of the interaction (e.g., insults, criticism) as well as the tone of the interaction (e.g., sarcasm, irritation, hostility, and tension). This code captures what happens as well as the feeling associated with the action. If the content of the individual's statement is negative, but it is said while smiling only high negativity is scored.

In considering expressions of rejection or invalidation, observations of direct verbalizations include insults, put downs, and mean statements (e.g., "Stop acting like a spoiled brat", "Don't be so stupid") may occur. In determining the intensity of these statements, it is important to consider the degree of the person's tone (e.g. raised voice, hostile) as well as the negativity of the statement (e.g., degrading the person's character). Other signs of rejection and invalidation include dismissing the other's emotion, or directly instructing the infant not to experience the emotion (e.g., "Stop crying." "Don't be scared.").

Anger, impatience, frustration, and irritation are emotions that do not necessarily carry a rejecting and invalidating message (e.g., parents can be frustrated, etc., without being overtly cruel or attacking to their infant). Inclusion of behaviors or statements that are cruel, insensitive, or mean raises the level of negative behavior above low intensity.

Score the parent each according to the following:

**0- None.** The parent does not express any negativity, hostility, defiance, anger, annoyance, or frustration during the segment.

**1- Very Low.** The parent shows little negative affect. If any evidence of anger, tension, and/or irritation is present, it is fleeting, momentary, and quickly resolved. Moments of negativity tend to be of low intensity (e.g., the individual does not appear to feel particularly hostile or angry toward another). The parent does not dismiss the infant's feelings or express any invalidation. For example, a parent who says "Don't touch the cord" in a tone that expresses mild frustration/irritation but is not followed by any other signs of negativity.

**2 - Low.** The parent expresses some negativity (one time) that is mild in intensity such that negative comments are about relatively minor behaviors (e.g., a mild complaint that the other individual is not being cooperative). The individual generally does not demonstrate hostility, rejection, or negativity. However there may be one moment of mild frustration or irritation. These difficulties should be resolved

readily, or a rating of 3 should be given. The individual generally does not demonstrate tenseness or conflictual affect. Any instances of negativity or frustration tend to be resolved fairly readily, however these instances last longer than that described by a code of 1, as the tension/negativity may linger slightly beyond momentary.

**3- Moderate.** There are a few instances when the parent makes rejecting and/or invalidating statements and/or displays a negative or hostile tone. Negativity should be mild in intensity, such that the individual's tone has an "edge" to it, but is not overtly attacking. The difference between assigning a code of 2 or 3 is one of frequency, as noted above. The individual demonstrates some negativity but the overall tone of the interaction is very mixed (only about half the time does the individual seem to be expressing frustration, irritability negative affect). The level of negativity or tension is variable, at times subtle and at times more obvious. Occurrences of negativity are of mild intensity and may not be quickly resolved.

**4- Moderately High.** The parent's negative behavior and/or tone reaches moderate intensity, though not more than one time. Moderately intense rejecting/invalidating statements include insults, put-downs, etc. The tone of voice used typically is such that the comment may come across as moderately attacking, disgusted, mocking, spiteful, and/or hostile (though a fairly rejecting and invalidating statement may be made without any overt change in tone of voice). Expressions of anger should be coded as a 4, if they are of moderate intensity (e.g., when a mother tells her infant, harshly "You need to stop that crying!"). Negativity should either be pervasive (e.g., characterizes over half of the interaction) or of moderate intensity. While there may be clear moments when the negativity, hostility, rejection, or invalidation is not present, when negative behaviors are present (i.e., negativity, anger, irritation, sarcasm, etc.) they should be relatively easy to identify (e.g., even when someone does not look angry, there is hostility present in his/her tone of voice or body posture).

**5- High.** There are two or more instances in the interaction when the parent's rejecting and invalidating behavior is of moderate to high intensity, and insults, put-downs, critical comments, etc. (e.g., a mother may say "I can't stand you"). The tone of voice used typically is such that the comment may come across as attacking, disgusted, mocking, and/or spiteful (though a very rejecting or invalidating statement may be made without any overt change in tone of voice). If a parent swears at the infant, the parent should automatically be given a rating of 5. If the parent hits, grabs, pulls, etc. the other individual, a 5 should be coded. With regard to frequency, negativity such as hostility, anger, or irritation, is present throughout much of the interaction (more than half of the time). Negative affect is of a rather intense nature, such that it is clear, obvious, and easy to identify (e.g., the mother is yelling over her hard crying). Voices may be raised, and feelings of hostility, anger, frustration, annoyance, irritation, anxiety, shame, or hurt are frequently obvious during the course of the interaction.

## **INTERACTIVENESS: PARENT CODE**

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Maternal interactiveness refers to the parent's engagement with the infant. Interactiveness can refer to the parent's verbal and nonverbal behavior. Nonverbal interactiveness may refer to the degree of eye contact, physical proximity and/or affection. Verbal interactiveness refers to the parent's engagement with the infant and can include talking and showing interest in the interaction. Generally, this code captures the parent's attentiveness to the infant. Interactiveness can be initiated by the parent or in response to the

infant's interaction. The tone of the interaction can be positive or negative. Therefore, the current rating should just rate the quantity of the interaction and the tone (positive or negative) should be captured elsewhere.

Score the parent according to the following:

**0- None.** The parent does not engage with the infant. The parent may be focused on an object rather than the infant (e.g., the parent playing with the toy out of without involving the infant – not parallel play). The parent appears bored and disinterested in the task and/or interaction.

**1- Very Low.** The parent shows little engagement with the infant. The parent barely speaks to the infant, does not show close proximity, and turns little attention to the infant. A code of 1 should be assigned over a 0 if the parent shows any attention or engagement with the infant at any point during the segment.

**2- Low.** The parent engages with the infant briefly, on a few occasions. Interactiveness does not characterize the parent's general state. It may seem to take a fair amount of effort on the part of the infant to engage his/her mother through verbal and non-verbal bids (cries, vocalizations, smiles, eye gaze, etc.). The parent rarely extends contact beyond what is minimal.

**3- Moderate.** The parent interacts with the infant for about half of the segment. The parent may not engage with the infant at times (e.g., appears bored, disinterested, etc.). The level of engagement focuses around the requirements of the task. At times, interaction may seem infant rather than adult initiated.

**4- Moderately High.** The parent both initiates and responds eagerly to interaction with infant. Generally, the parent is looking at the infant, facing him/her and making efforts to increase engagement (e.g., playing a game together, sitting close to the infant). Interactions are marked by enthusiasm and genuine engagement, and the interaction does not inhibit and if anything facilitates infant's regulation and enjoyment of tasks most of the time. The parent might have brief periods in which she is less interactive, however this should not occur more than once during the interaction.

**5- High.** Parent both initiates and responds *eagerly* to interaction with infant. Interaction is marked by enthusiasm and genuine engagement. This may be expressed through the mother's tone of voice, facial expressions, and proximity to the child. The content of interaction (if verbal) might go beyond task to be engendering closeness. The interaction does not inhibit and if anything facilitates the infant's soothing and enjoyment of tasks. A code of 5 is assigned above a 4 if the mother does not show any periods of disinterest or decreased engagement. The mother is consistently engaged with the infant

## **PARENT'S RESPONSIVENESS TO INFANT: PARENT CODE**

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Responsiveness generally refers to how a parent reacts to the infant's verbal and nonverbal requests for attention or assistance. Requests from the infant do not have to be conscious cries for assistance, but can rather be based on the infants' gaze or affect. However, maternal reactions are contingent on infant's actions or needs. Responsiveness should stand out as a distinctive maternal response (or lack there of) to an infant's bid for attention or assistance or the infant's emotional state.

Emotional expressions: Infants may express emotions at various points in the interactions. Maternal responses that label the infant's emotion or help the infant regulate his/her emotional state (e.g. by soothing) should be regarded under responsiveness.

**Qualities of maternal responsiveness includes:**

1. The parent noticing the infant's negative emotion, struggle or need, acknowledging it, and labeling it for the infant (e.g., I can see you are upset).
2. The parent doing something to address the infant's emotion or need (e.g., comfort).
3. The parent's attempt matches the infant's needs in a situational or developmentally appropriate way.
4. The parent's response is appropriately timed, with a response within 5 seconds of the infant's need being apparent.
5. The parent moves in when the infant needs the parent (i.e. doing so before the infant becomes unduly distressed or stuck) and should be regarded as responding to the infant within 5 seconds of the infant's request and moves out when the infant is averting his/her gaze or overstimulated by the play.

The level of maternal responsiveness should be determined by the presence of these five qualities.

**Score the parent according to the following:**

**0- None.** The parent does not respond the infant's requests and/or the parent does not respond to the infant's attempt to gain attention (directly through vocalizations or cries and/or indirectly through nonverbal behavior). The parent is unaware of the infant's bids for help.

**1- Very Low.** The parent hardly notices or responds to the infant's emotional cues or needs. When the parent does respond, her response does little or nothing to address the infant's needs, is likely ill-timed (i.e., delayed by longer than 5 seconds. In addition, parent's attempt does not match the infant's needs given his/her developmental level or the situation. The parent may ignore the infant's bid. It appears that the infant is left floundering much of the time.

**2- Low.** The parent notices or responds to the infant's emotional cues on one or two occasions. However, her responses are minimal in nature such that contact rarely extends beyond what is necessary for the task or to attend to her infant. This type of responding may be embodied by short responses (e.g., a quick statement, "You are okay," not followed by additional soothing). The parent's response is likely ill-timed (i.e., delayed for longer than 5 seconds). And does not consistently meet the infant's developmental level or match the needs of the situation. What little parent response that is visible in is awkward and/or unskilled. Although the parent shows more responsiveness than is coded in a 1, the infant doesn't benefit from parent's intervention.

**3- Moderate:** Parent responds to infant multiple times but the response is not consistent, smooth (i.e. feels forced or awkward), and/or only includes 3 of the qualities listed above. That is, the parent may notice the infant's emotion, and respond in a way that addresses the infant's need, but the response may not be entirely effective in that it is ill-timed (delayed by longer than 5 seconds but within 10 seconds). Consistency refers to responding to the infant most of the time; for a code of 3 the parent may miss one request for attention or assistance (verbal or nonverbal). In responding to the infant the parent may label the infant's emotions or effectively soothe the baby one time, but shows inconsistency in her responses (e.g., addresses some but not all of the infant's cues).

**4- Moderately High.** Parent generally notices and responds to the infant's emotional expressions and struggles. With regard to timing, the parent responds to distress or bids for attention within 5 seconds. The parent may label the infant's emotional expressions (e.g., I can see you are feeling frustrated because Mommy stopped playing with you for a few minutes) and may move onto problem solving (e.g., providing comfort or distraction). The mother may notice when her infant is averting his/her gaze, and pause or decrease the intensity of the interaction / stimulation to respond to this infant cue. Responsiveness generally feels smooth to observer, but on one occasion the parent may not respond effectively or smoothly (this should be a relatively minor omission or error). A code of 4 is assigned instead of a 5 if the mother addresses most but not all of the qualities of maternal responsiveness outlined above.

**5- High.** Parent captures all of the qualities of maternal responsiveness each time the infant expresses a negative emotion or bid for attention. The parent responds to infant's emotional expressions and needs effectively, consistently, and always on time (within 5 seconds) and moves out if an infant is overstimulated. The maternal response should prevent escalation of the problem. The parent directly responds to the infant's cues such that for emotional expressions, the parent may comfort the infant, label the emotion and/or decrease the intensity of play if it becomes too intense for the infant.

**NOTE:** Responsiveness is only coded when the situation requires a maternal response.

## **NEGATIVE CONTROL: PARENT CODE**

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Negative Control refers to the degree to which a parent exerts inappropriate control over her infant. Inappropriate control includes maternal intervention that is ill-timed, excessive, or inappropriate for the infant's needs. At the highest level of negative control, the parent may entirely dictate (over-ride) the play regardless of the infant's needs and wishes, the parent may be physically intrusive (forcing, engaging in rough handling) and inappropriately stimulating (causing dysregulation). The nature of negative control is such that maternal needs to exert control and assistance in the situation are used regardless of the child's need for external support or inclusion.

### **Qualities of Negative Control include:**

1. Maternal imperatives that are given in order to dictate child behavior. Thus, the mother may provide unnecessary dictatorial instructions that serve to control the child's behavior and leave little room for autonomous functioning (e.g., "Don't do that"; "Don't play with this"; "Look at the toy"). The interaction therefore appears driven by the mother's wants, rather than by the infant's signals of engagement or overstimulation.
2. Verbal intrusiveness: The parent may dominate the conversation such that she speaks over the infant's vocalizations or does not pace the "conversation" with her infant as though it were a back and forth. The parent may also direct the child's attention elsewhere (e.g., the child is playing with a toy and the parent redirects his/her attention elsewhere).
3. Physical intrusiveness: The parent may dominate the activity such that she takes it over and makes the play or task her own (e.g., takes toy and appears to play with it on her own, leaving the child to without an activity, may force her child to play with the toy in a certain way, or engage with the toy when they are exploring another object (e.g. seat strap)). The mother's actions are such that she excludes the child's involvement or participation. The mother may also physically

intrude on the infant's regulation (e.g. roughly handle the crying baby) or infant's play (e.g. physically move the infant's head, limbs, etc.)

Score the parent according to the following:

**0- None.** The parent displays no forcing, over-riding, or physical intrusions in the infant's play. No instances of verbal, nonverbal, or physical negative control are observed.

**1- Very Low.** The parent makes one minor intrusion into the child's behavior (e.g., engages in play / action that causes the infant to avert his/her gaze one time). However, most of the interaction is characterized by low control.

**2- Low.** Parent efforts to exert control and/or intrusions into the infant's behavior occur several times, but are of a minor nature. For example, the parent may distract the child from his/her task one time and overstimulate the infant with a mild behavior on one occasion.. However, these intrusions do not interfere with the child's ongoing play or regulation beyond a momentary interruption.

**3- Moderate.** Parent expresses verbal intrusions (e.g., parent talks to the infant but does not allow the infant time to respond) and/or momentarily distracts the infant (e.g., infant is playing with another toy and the parent redirects his/her attention). These behaviors interfere with the infant's ongoing activities. The mother may overstimulate the infant with a moderately intense behavior. She may on a few occasions speak over the infant's cooing / verbalizations.

**4- Moderately High.** Parent exerts control over the infant's play such that she provides unnecessary guidance in order to control the infant's gaze and behavior (e.g., constantly makes loud noises to draw the infant back into the game that she has developed). In addition, the parent's instructions may provide little room for independent behavior or functioning such as object exploration. The parent may also use physical intrusiveness one time, such that she may grab a toy or object from the infant in order to demonstrate its use or physically redirect the infant. The mother's verbalizations of behaviors may be of an intensity that is momentarily distressing to the infant, such that the infant's distress is longer than a fleeting gaze aversion.

**5- High.** Parent exerts high levels of control over the child's behavior such that she repeatedly and unnecessary over-rides the play and/or physically intrudes into the infant's play (e.g., grabs a toy away from the infant). The parent may dominate the play to the exclusion of the child's participation. The parent may use physical redirection (forcing) on numerous times or to a high level (e.g. physically moving the infant's head). The mother may raise her voice to speak over her infant's positive vocalizations. The parent's behaviors may be startling, frightening, or overwhelming to the infant to the point of prompting infant dysregulation.

#### **PARENT'S RESPECT FOR CHILD'S AUTONOMY: PARENT CODE**

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Parent autonomy granting allows the child to express autonomous behavior. Autonomy granting includes behaviors that allow the child room to make the interaction his/her own (e.g., the child directs what toy will be played and the parent follows) and encourage and respects the child's lead.

Effective or high autonomy granting may be expressed verbally or nonverbally. Verbal autonomy inviting the infant's guiding of the interaction (e.g., "Which toy should we play with?"). Nonverbal behavior includes allowing the child to lead the interaction.

**Qualities of autonomy granting that allow the child to make room in the interaction include:**

1. Allowing the child to explore his/her surroundings (e.g., the room and various tasks). For example, allowing the child to explore the set of toys rather than pushing him/her to immediately start playing with a particular toy.
2. Allowing the child to initiate and terminate interactions with an object.

**Qualities of autonomy granting that encourage, respect, and support the infant's autonomy include:**

1. Maternal recognition of the infant's choices or preferences. That is, maternal acknowledgement of the infant as being an individual with likes and dislikes.
2. Maternal encouragement of the infant's role in guiding the play. The parent may encourage the expression of autonomy by providing the child with choices, thus establishing limits on the child's behavior and providing freedom to shape the interaction or task (e.g., "You can do \_\_\_\_\_, or you can do \_\_\_\_\_").
3. The mother may attribute intention or will to an infant behavior as being goal directed. (e.g. When baby holds out hand, mom says, "are you trying to hold this? Did you want this? Here you go, were you reaching for this?")

**Score the parent's respect for autonomy according to the following:**

**0- None.** The parent controls the interaction and does not allow the child to make autonomous moves. The parent actively discourages the infant from autonomy when he/she makes attempts to shape the interaction.

**1- Very Low.** Parent controls session and rarely allows infant to make autonomous moves. The parent employs active attempts to discourage the infant's efforts to exert independence such as preventing exploration of the other toys, preventing the infant from initiating interactions (e.g., the parent takes control of the toys and then gives instructions or allocations to the infant)

**2- Low.** Parent allows only minimal amounts of autonomy from infant. On one occasion the parent may grant autonomy, however this is not the parent's general state and active encouragement of independence is not observed. The infant may be allowed to minimally explore the environment or initiate one interaction. However, the infant's efforts to guide or influence the play are usually met with verbal discouragement, or nonverbal behavior, which blocks the infant's autonomy (e.g., parent takes over the toy, does not acknowledge the infant's independent behavior and moves on). The parent may verbally indicate autonomy granting, but her behavior conveys control toward the infant.

**3- Moderate.** Parent generally allows the infant autonomy without encouraging him/her to do so (i.e., most of the segment). The parent allows the infant to explore the situation or task, initiate interactions and/or attributes, will, intention, and preference to her infant's behavior. However, the parent does not move onto actively encourage the infant's autonomy such that times when the parent and infant have differences in preference, the infant is met with disapproval and discouragement by the parent.

**4- Moderately High.** Parent actively grants the infant autonomy, including allowing exploration, initiation of interactions/tasks, and free expression of the infant's preferences. In addition, the parent moves onto actively respecting and encouraging the infant's autonomy providing choices, perhaps querying the infant's preference, and possibly attributing intention to the infant's actions. This encouragement is done without relinquishing her role as a parent to the infant. Encouragement of autonomy should be observed 1 time to receive a score of 4.

**5- High.** Parent both actively grants the infant autonomy by allowing exploration, initiation of interactions/tasks, free expression of the infant's preferences. In addition, the parent consistently encourages and respects the infant's autonomy by behaviors such as providing choices, querying the infant's preference, and attributing intention to the infant's actions. The parent encourages autonomy without relinquishing her role as parent to the infant. In addition, a code of 5 should be assigned if multiple observations of autonomy granting and encouragement of independence are observed.

## **SCAFFOLDING: PARENT CODE**

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This code primarily assesses the overall level of guidance and scaffolding in order to facilitate and enhance the infant's play. Parental guidance should be well-timed and facilitate the focus, engagement, and enjoyment of play.

### **Qualities of Guidance and Structure include:**

1. When the infant becomes glassy-eyed or appears unoccupied, the parent facilitates the infant's play through the introduction of a toy, positioning of objects, or modeling of play as ways to bring the child back to the task.
2. Parent's engagement in the infant's ongoing activity enhances the child's social/cognitive play. The parent may enhance the social play by verbally and behaviorally engaging in turn-taking exchanges (e.g. having a conversation with the infant, and pausing as though the infant will respond; taking turns playing with a toy).
3. The parent does not interrupt her infant's focus. Rather, she notices her infant's focused attention and maintains the current focus. The parent's role serves to facilitate the infant's and makes the task more interesting by asking questions, describing qualities of the object of focus, naming the object, demonstrating features of the object, and other manipulations of the object that encourage focus on the object at hand. This is different from interactiveness, which captures the quality of the mother's involvement and investment in the task. Guidance involves the mother facilitating the task.

**NOTE:** Parental scaffolding is self-initiated, as parental responses to children's bids for assistance/attention should be captured under *Responsiveness*.

Score the parent according to the following:

**0- None.** Parent offers no help during the task. The infant is left to play on his/her own.

**1- Very Low.** Parental assistance includes basic involvement without elaboration (e.g. hands the infant the toy at the beginning of the interaction). When the infant becomes glassy eyed, distracted or disinterested,

the parent does not attempt to re-engage the infant in play. The infant does not benefit from the parent's guidance and seems to be left on his/her own to play.

**2- Low.** Parent offers minimal assistance to engage the infant in play. At times the parent may re-present the toy to the infant, but not in a way that is elaborately captivating or well-timed (e.g. the infant has been disengaged for several seconds). Attempts to re-start the play are not skillful (e.g. incorporate mother-ese or other strategies for capturing the infant's attention and/or do not allow the child time to respond to the bid to play). The interaction lacks social synchrony. The mother may regularly interrupt the infant's focus.

**3- Moderate.** The parent may speak to the infant in mother-ese and engage in the infant's play in a way that is minimal in nature. When the infant is unoccupied or off-task, the parent helps the child move back on task. Any guidance from the parent serves to essentially restate the infant's attention to the toy without elaboration or enhancement. The parent may interrupt her infant's focused engagement through the introduction of a new object of focus. Attempts to move the child on task are followed by time to allow the child to respond to the guidance.

**4- Moderately High.** During the play task the parent facilitates the child-directed activities by occasionally encouraging, elaborating, and maintaining the infant's attention on the object at hand by making the object more interesting to the infant. The parent does not interrupt her infant's focus. Parental efforts to engage with the child are unobtrusive and serve to enhance the activity. The parent may enhance the infant's sustained attention through tone of voice (mother-ese) and incorporate social aspects into the by pretending to have a back-and-forth conversation with her infant, or take turns with her infant.

**5- High.** During the play tasks, the parent facilitates the infant-directed activities by encouraging, elaborating and maintaining the infant's attention on the object at hand by making the object more interesting on numerous occasions (e.g. mother describes the object, demonstrates a feature of the object, manipulates the object). The parent does not once interrupt her infant's focus, and the efforts to engage with the child are unobtrusive, and serve to enhance the activity. The parent may enhance the infant's sustained attention through tone of voice (mother-ese) and incorporate social aspects into the by pretending to have a back-and-forth conversation.

*Adapted from the Parent-Infant Interaction Observational Coding Manual (Lengua et al., n.d).*

## Appendix D

### Observed Parenting Behavior Coding Constructs and Composite Score Calculation

This appendix includes Table D1 that illustrates the current study's composite observed parenting behavior, integrating multiple observed maternal behaviors that contribute to early relational health, specifically reflecting three empirically supported domains: warmth - a combined score of positive affect and interactiveness; sensitivity - a combined score of guidance/structuring, respect for autonomy, and reverse-coded negative control; and responsiveness - the mother's ability to respond appropriately and contingently to infant cues.

**Table D1**  
*Composite Observed Parenting Behavior Components*

<b>Composite Construct</b>	<b>Observational Codes Used</b>	<b>Behavioral Domain Represented</b>
<b>Warmth</b>	Positive Affect (pa), Interactiveness (in)	Expression of emotional warmth and engagement
<b>Sensitivity</b>	Guidance & Structuring (gs), Respect for Autonomy (ra), Negative Control (nc, reverse coded)	Autonomy-supportive and non-intrusive caregiving
<b>Responsiveness</b>	Responsiveness (re)	Timely and contingent reaction to infant cues

**Note.** Variables were standardized (z-scored) and averaged to form a composite score (parenting\_avg). Models were estimated using the imputed dataset (completed\_data).

## Appendix E

### Comparison of Sample Scores to Published Normative Values

**Table E1**

*Comparison of Sample Scores to Published Normative Values*

<b>Measure</b>	<b>Sample Mean Range (T1-T3)</b>	<b>Published Norm Range*</b>	<b>Interpretation</b>
<b>Dispositional Mindfulness (FFMQ)</b>	84.05-85.60	~82–90 (Baer et al., 2006; Gu et al., 2015)	Consistent with general adult population norms
<b>Self-Compassion (SCS–SF)</b>	40.71-42.06	~36–42 (Neff, 2003; Raes et al., 2011)	Within expected range; slightly lower values are common postpartum

**Note.** Higher scores reflect greater dispositional mindfulness and self-compassion. Published ranges represent approximate values from validation and comparison studies rather than fixed clinical cutoffs.

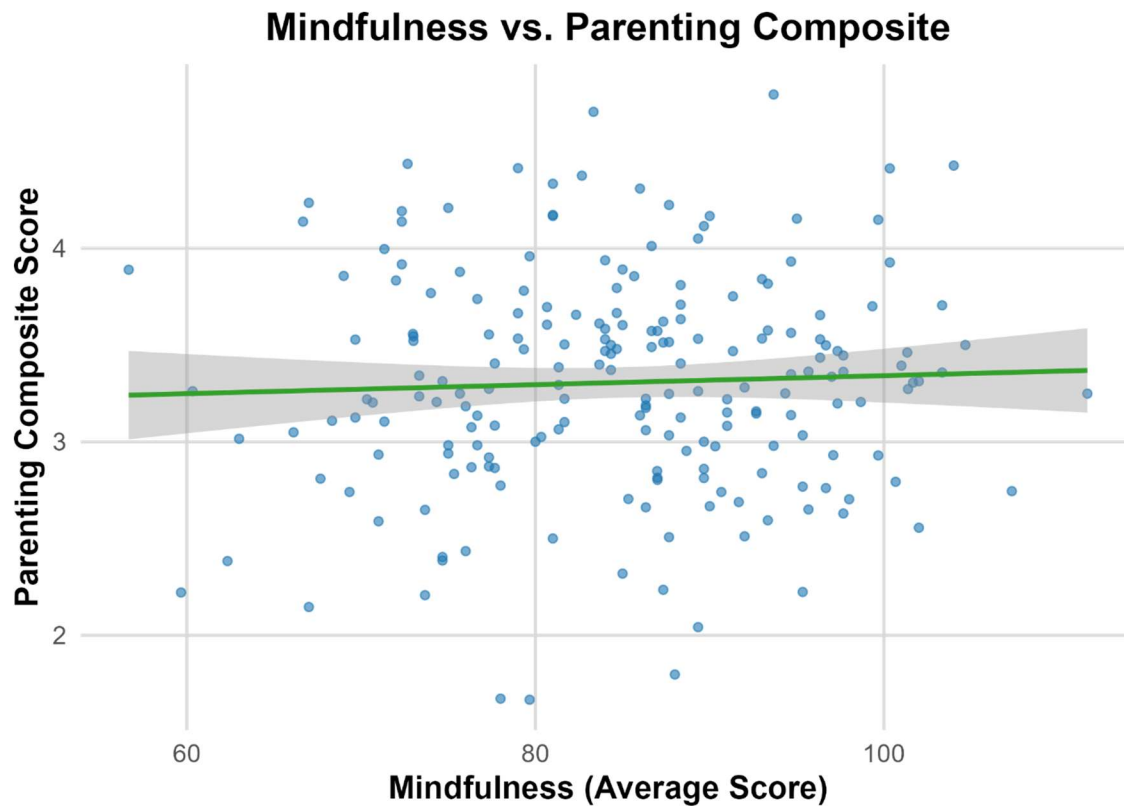
\*Published normative values drawn from Baer et al. (2006), Gu et al. (2015), Neff (2003), and Raes et al. (2011).

## Appendix F

### Regression Analysis Scatterplots

**Figure F1.**

This scatterplot illustrates the relationship between self-reported mindfulness and a composite of observed parenting behaviors at 2 months postpartum. The solid green line represents the linear regression fit, with 95% confidence intervals shaded. No significant association was found ( $\beta = 0.005$ ,  $p = .40$ ).



**Figure F2.**

This scatterplot illustrates the relationship between self-reported self-compassion and a composite of observed parenting behaviors at 2 months postpartum. The solid orange line represents the linear regression fit, with 95% confidence intervals shaded. No significant association was observed ( $\beta = -0.005$ ,  $p = .56$ ).

