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Relational Savoring in Mothers of Children with Autism Spectrum Disorders: An Attachment-  
Based Intervention

By

Gerin Elizabeth Gaskin

Claremont Graduate University  
2021



## **Approval of the Dissertation Committee**

This dissertation has been duly read, reviewed, and critiqued by the Committee listed below, which hereby approves the manuscript of Gerin Elizabeth Gaskin as fulfilling the scope and quality requirements for meriting the degree of Doctor of Philosophy in Psychology.

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Parents of children with autism spectrum disorder (ASD) are at risk for higher depressive symptoms and lower subjective well-being compared to parents of neurotypical children or children with other developmental delays. Current treatment approaches to support these parents primarily focus on psychoeducation and skills training, but few focus on strengthening the connection between parent-child dyads. This project included two studies that examined the outcomes associated with a novel intervention, *relational savoring*, which identifies and amplifies moments of parent-child connection. In Study 1,  $n = 282$  mothers were randomly assigned to an experimental group in which they completed an online intervention (relational savoring; RS) or a control intervention (personal savoring; PS) and provided responses to pre- and post-measures (positive and negative emotions, parenting satisfaction, and feelings of closeness). In Study 2,  $n = 63$  mothers were randomly assigned to in-vivo versions of RS or PS conditions and were assessed at three timepoints: pre-intervention (T1), post-intervention (T2), and 4-week follow-up (T3). In addition to Study 1 measures, mothers completed two sets of questions that were coded for reflective functioning, and mothers' behaviors from semi-structured play tasks at T1 and T3 were coded for maternal responsiveness and maternal affect. Predictions included that mothers in the RS group would show improved affect as indexed by increases in positive emotions and decreases in negative emotion, greater relational closeness, as indexed by parenting satisfaction and feelings of closeness (Studies 1 and 2); more secure

attachment-related behaviors, indexed by RF, maternal responsiveness and affect (Study 2); and that intervention effects would be stronger for parents experiencing greater stress (Study 1). Study 1 demonstrated that both groups experienced decreases in negative emotions, but PS participants significantly decreased in positive emotions. Study 2 demonstrated that both groups exhibited improved affect and maternal responsiveness. No other predicted effects were observed. Overall, there were no specific advantages for the RS mothers, but the decreases in negative emotions across both studies suggest that PS and RS both may be beneficial for mothers of children with ASD. Findings have implications regarding how organizations can support this growing population and the importance of interventions based in developmental theory and research.

## **Dedication**

To my brother, Devin, for being “an angel sent down from the heavens,” who lights up every room he enters with his warm and kind energy, and his curiosity. I could not have asked for a better brother or friend. Also, to my parents, Robert and Jennifer Gaskin. Their sacrifice, unwavering support, and unconditional love has allowed me to achieve at my highest level and I am eternally grateful. I love each of you very much.

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## Chapter 1. Introduction

Autism spectrum disorder (ASD), the fastest growing neurodevelopmental disability (Autism and Developmental Disabilities Monitoring Network [ADDMN], 2014), typically presents itself early in development, and has lifelong impacts on children, many of which may affect a parent's bond with their children. Within the United States, the prevalence of ASD has reached approximately one to two percent of the population, or one in 54 people (American Psychiatric Association, 2013; Maenner et al., 2020). With this rise in incidence comes the need to create and investigate effective interventions to help families affected with ASD flourish. One theoretical framework that seeks to understand the intricacies of the parent-child relationship is attachment theory. Attachment scholars theorize that the relationship between parenting quality and child attachment may be a bidirectional process and assert the importance of exploring parental experiences of caring for autistic children<sup>1</sup> (Sameroff, 2009; Siller et al., 2014; Slade, 2009; Teague et al., 2018). Many factors specific to the child, the parent, and the environment affect the extent to which a parent provides consistent and responsive care, which in turn facilitates a child's ability to form a secure attachment. Extant research suggests that a secure attachment with a parent serves as a protective factor for neurotypical children (Bowlby, 1969/1982). Moreover, attachment security may be even more critical for children with ASD, who due to the social deficits associated with ASD, are likely to require a high-level of parental support to negotiate the social world (Sigman et al., 2004). Unfortunately, research suggests that children with ASD appear less likely to form secure attachments than neurotypical children or children with other developmental disabilities (Teague et al., 2017). Given the importance of the attachment relationship for all children, including those with ASD, and the precariousness of this

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<sup>1</sup> This manuscript will use both person-first language as well as identity-first language, the latter being in adherence with the preference of many people within the autism community.

bond in autistic children, parents could benefit from intervention approaches based in attachment theory that strengthen parent-child bonds and bolster attachment-related processes within these families.

A panoply of evidence-based interventions for children with ASD have focused on child- or dyad-related outcomes, with the latter focusing on incorporating parenting into the intervention process, a key component of many current treatment models that are considered best-practice (Da Paz & Wallander, 2017; Lovaas, 1987; National Autism Center, 2009; National Research Council, 2001). Despite the emphasis on including, educating, and even training parents in implementing effective interventions, few studies directly target parent outcomes (Estes et al., 2019; Guo et al., 2017; Kasari et al., 2014). Treatment approaches that target parent-focused outcomes may be crucial because the cumulative impact of the emotional, social, and psychological demands of caring for a child with ASD place parents at risk for negative outcomes such as increased levels of stress, higher prevalence of mental illness, and lower levels of well-being (for review, see Da Paz & Wallander, 2017). These risks are especially problematic considering that parents are responsible for several roles (e.g., teacher, disciplinarian, caregiver, attachment figure) and are considered the primary organizers who manage the pragmatic aspects of providing care and services for an autistic child (Benoit, 2004; Greenspan & Wieder, 1997). In addition to planning and fulfilling all care-related services, parents must also provide responsive and sensitive parenting with the goal of helping their child reach developmental milestones (Estes et al., 2019; Seskin et al., 2010). Parent involvement in ASD-related treatment can include helping to implement interventions that manage their child's symptoms or negative behaviors, coordinating school-based or program-based services, and meeting the needs of a child who lacks effective social communication skills (Bearss et al.,

2015). However, because parents of autistic children are at-risk for increased stress (Eisenhower et al., 2005; Hoffman et al., 2009), and higher rates of anxiety and depression (Teague et al., 2018) compared to parents of children with typical development and with other developmental delays, there is a pressing need for research focused on assessing interventions aimed at boosting caregivers' psychological resources (Derguy et al., 2015; Faso et al., 2013; Seskin et al., 2010).

Existing interventions focus on parent training and support parents of autistic children in critical and necessary ways such as educating them about the disorder, helping them to access services, and teaching them how to implement behavior management approaches. Parent training approaches are pivotal considering that upon their child's diagnosis, parents must quickly learn how to provide a different level of care and support than they had planned. This unexpected change associated with various unknown outcomes regarding the child's altered trajectory can bring difficult emotions such as grief and loss as well as high levels of concern (Crown, 2009; DePape & Lindsay, 2015), feelings of shame (Neff & Faso, 2015; Ooi et al., 2016), and chronic stress (Costa et al., 2017; Keenan et al., 2016). These emotions combined with the child's ASD symptomology may also lead to a lack of feeling of closeness between parents and children with ASD. Certainly, there is recognition that some parents are inundated with negative emotions, ill-equipped to deal with their child's diagnosis, burdened with the demands of increased needs, and could benefit from more support.

Recent investigations regarding mindfulness-based approaches have targeted parental mental health and stress (Ferraioli & Harris 2013; Lewallen & Neece, 2015) and have reported positive outcomes for parent-child dyads in which the child has ASD, suggesting that supporting parents' cognitive resources have a trickle-down effect to children (Lewallen & Neece, 2015; Teague et al., 2018). However, parent-focused interventions that focus on social and emotional



strength-building within the parent could be critical for this population. For example, children with ASD may infrequently provide clear feedback indicating that the child is satisfied with the parent's efforts (Slade, 2009; van IJzendoorn et al., 2007), which in turn can leave a parent feeling depleted while they try to provide additional care and may increase the risk for poor caregiver mental health. The effects of a *parent-specific* intervention appear promising as a meta-analysis revealed that on average, psychological treatments assessed in randomized controlled trials produced acceptable effect sizes (medium to large; Da Paz & Wallander, 2017), yet the majority of the studies were based in cognitive approaches such as cognitive behavioral therapy; only one study included an intervention based in positive psychology and few focused on relationships. Another positive psychology-based intervention that focuses on reflecting on pleasant memories to enhance positive emotions and well-being is called savoring (Bryant & Veroff, 2007; Speer et al., 2014). Whereas previous psychological interventions like savoring focused on promoting maternal well-being, a newer form of savoring called *relational savoring* focuses on memories of positive relational moments to build psychological strengths that should be more closely associated with maternal child-focused strengths including sensitive parenting.

In the proposed studies, an attachment-based form of savoring, relational savoring (RS), will be used. RS helps people focus on memories that are associated with moments of close connection or times when people provide care or foster growth (Borelli et al., 2010; Borelli et al., 2014, Borelli, Hong, et al., 2020). RS is associated with positive outcomes for different at-risk groups (Borelli, Bond, et al., 2020; Wang et al., 2019). A notable RS study compared the intervention to a control condition and explored the positive outcomes associated with the intervention including increased feelings of closeness and parental satisfaction in mothers of young children (Burkhart et al., 2015). Research in the ASD community has focused on a

combination of PS and RS, but a study comparing the two interventions has yet to be conducted. Moreover, to the best of my knowledge, few if any interventions target parents' perceptions of their relationship or support parents in feeling connected with their child.

Enhancing parents' focus on moments of connection with their children could be a useful approach to helping parents of children with ASD. Attachment theory is a theoretical lens through which to understand the interactions between parents and children and identifies new approaches to support parents of autistic children. RS is an innovative intervention aimed at increasing parents' psychological resources (i.e., positive emotions, parenting satisfaction, reflective functioning) and decreasing negative emotions. This intervention could also enhance parents' feelings of connectedness to their children, and promote sensitive caregiving in parents, which could ultimately support children's growth.

### **Attachment as a Theoretical Lens for Children with ASD**

One theoretical framework for understanding parent-child relationships is attachment theory (Bowlby, 1969/1982; Cassidy & Shaver, 2008). In Bowlby's seminal work, he shifted away from the psychodynamic paradigm and instead emphasized the influence of experience in personality development. Attachment theory holds that the ways in which a parent responds to their child through the first year of life supports the creation of an internal working model (IWM), which acts like a lens through which social information is filtered (Bowlby, 1969/1982, 1973). The IWM is theorized to help the child know what to expect when they connect with others, and helps the child understand the self and how they fit into the world. The attachment representation will affect a child's ability to explore the world and the extent to which the child is likely to communicate their internal states such as feelings, thoughts, or needs (Ainsworth et al., 1978). How a caregiver responds to the child will support the development of a secure or

insecure attachment representation. Secure representations help the child internalize messages that they are worthy of care, that distress can be resolved, and that connecting with others is beneficial, helpful, and a useful strategy to employ at times of need (Ainsworth, 1973; Ainsworth et al., 1978). On the other hand, insecure representations may lead the child to learn to hide or distort their needs or expression of needs. A child may learn to either suppress vulnerable feelings and not seek help when in need, or heighten requesting behaviors and become over-reliant on others; both strategies promote maladaptive coping behaviors (Cassidy & Berlin, 1994) and are associated with later psychopathology (Mikulincer & Shaver, 2012; Sroufe et al., 1999). Therefore, early attachment representations can have wide-ranging effects and can orient social behavior across the lifespan.

### ***Parental Sensitivity***

Decades of attachment research document that the development of a secure attachment is contingent upon the parents' ability to respond sensitively to their child's cues (Ainsworth et al., 1978; Ainsworth & Bowlby, 1991; Bowlby, 1982). Further, research conducted with mothers across cultural groups throughout the world suggests that the archetypal image of the ideal mother is one who provides care in a highly sensitive manner (Emmen et al., 2012; Mesman et al., 2016). This research bolsters the pioneering work of Mary Ainsworth and colleagues (1978) whose research helped the field understand which crucial aspects of a mother's behavior constitute maternal sensitivity and affect infant attachment security. The extensive research unveiled four aspects of behavior that can be used to assess maternal sensitivity: a) how the mother responds to the baby's signals, b) the extent to which the mother cooperates or interrupts behavior, c) whether the mother is psychologically and physically available, and d) whether the mother accepts or rejects the baby's needs (Ainsworth et al., 1978). When a mother responds

sensitively, she provides the child with a secure base from which they can explore the world and a safe haven for the child to return to when in need. In contrast, insensitive responses hinder felt security (the child's internalized representation of their parent as a source of security and safety). Felt security means that the child trusts that the parent will facilitate their explorative activities and trusts that the parent will be present when the child needs support psychologically, emotionally, or physically. Trust and confidence in the caregiver enable the child to resolve difficult situations and receive soothing and comfort (Ainsworth et al., 1978). Overall, these early interactions shape the IWM and affect the growing child's image of self, others, and later social relationships.

### ***Parental Reflective Functioning***

Since Ainsworth's fundamental work, researchers have identified reflective functioning (RF) as a critical psychological factor that may underlie parenting sensitivity (see Camoriano, 2017 for a review). Parental RF is a parent's capacity to acknowledge the potential thoughts and emotions (i.e., internal states) influencing their children's behavior (Fonagy et al., 1991; Fonagy & Target, 1997; Slade, 2005). A highly reflective parent will first analyze a situation, then render hypotheses regarding the child's internal state (engage in RF or mentalizing), and construct an appropriate response (Slade, 2005). To constitute reflective practice, the parent must also be prepared to deduce that they have hypothesized incorrectly and be willing to adjust their response accordingly. Researchers have also distinguished two dimensions of RF: a) self-focused RF or a parents' awareness of their own internal states and b) child-focused RF or the parent's ability to understand their child's internal states (Suchman et al., 2010). Both dimensions are important for understanding the underlying causes of both their own and their children's behaviors and the subsequent impact of those behaviors on one another (Suchman et al., 2010).

A parent who discerns their child's needs and checks in with the child about whether their interpretation aligns with the child's experience will, in turn, foster the child's ability to reflect inwardly about their own experiences (Fonagy & Target, 1997). In contrast, a parent who has a lower ability to engage in child-focused RF may respond to a child's behavior solely on the basis of their own internal state; lack of recognition of the child's internal state may prevent the child from recognizing and learning to express their needs. This in turn may lead to a child who lacks the ability to internally connect to their experiences, building a sense of a coherent self.

Historically, researchers assumed that children with ASD were unable to form distinct attachment relationships (American Psychiatric Association, 1980). In contrast, recent work has emphasized the bidirectional relationship and the mutual influence that a parent and child bring to interactions (Beurkens et al., 2013; Karst & Hecke, 2012). The literature has been mixed regarding whether autistic children experience attachment security at rates similar to neurotypical children (Capps et al., 1994; Rutgers et al., 2007). Cross culturally, excluding families under particular stress, approximately 70% of neurotypical children receive secure classifications (Mesman et al., 2016). For children with ASD, earlier research suggests that compared to neurotypical children, or to other clinical groups, such as children with learning disorders or intellectual deficits, children with ASD are dramatically less secure and exhibit more attachment disorganization (Rutgers et al., 2007; van IJzendoorn et al., 2007). Other findings suggest that nearly 50% of autistic children form secure attachments with their caregivers (Capps et al., 1994; Rozga et al., 2018; Rutgers et al., 2004; Teague et al., 2017), suggesting that secure attachments are possible but still underrepresented in autistic children (Sivaratnam et al., 2015). In contrast, studies of older children that use self-reported attachment security indicate no differences between children with and without ASD in middle childhood (Bauminger et al.,

2010; Chandler & Dissanayake, 2014; Wu et al., 2015). Importantly, attachment patterns appear to be moderated by both intellectual functioning and severity of ASD-related symptoms such as negative behaviors. Specifically, children with fewer ASD-related symptoms and higher cognitive functioning are more likely to display secure attachments than children with poorer communication, social skills, and cognitive capacity (Rutgers et al., 2007). However, the extent to which intellectual functioning and symptom severity affect attachment representations remains unclear (Teague et al., 2017).

As with neurotypical children, the benefits associated with secure attachments in children with ASD are substantial. In fact, the benefits associated with a secure attachment may be more important for the psychological outcomes in autistic children than their neurotypical counterparts. Attachment security has been shown to be a critical factor affecting social, emotional, and psychological outcomes for children with ASD (Koren-Karie et al., 2009; Rutgers et al., 2007). A secure attachment may serve a protective function and may ameliorate the persistent social impairments that can lead to long-term, detrimental impacts due to the child with ASD's biological inability to share and reciprocate affection and form bonds with others (Baron-Cohen et al., 1985; Kahane & El-Tahir, 2015; Seskin et al., 2010; Sivaratnam et al., 2015). Compared to insecure children with ASD, secure children with ASD appear more responsive to bids for joint attention, are more likely to provide empathic responses to distressed researchers, and exhibit better receptive language abilities (Capps et al., 1994, Rozga et al., 2018, Siller & Sigman, 2002), qualities that are believed to constitute the building blocks of social development in neurotypical toddlers (Whitmer & Honig, 1994). Moreover, research suggests that similarly to neurotypical children, parents of children with ASD can provide a safe haven

and secure base for their children with ASD (Teague et al., 2017). Taken together, research clearly suggests that secure attachment is beneficial for autistic children.

Given the importance of a secure attachment in children with ASD, it is also essential to examine its correlates, namely, parental sensitivity and reflective functioning in ASD parent-child dyads. It is important to note that the underpinnings of a secure attachment can be difficult to achieve for a variety of reasons including aspects that the child brings to the relationship as well as maternal resources. There are unique challenges for parents to engage in RF and provide sensitive care to autistic children. First, children's ASD symptoms, signaling behaviors, emotional experiences, repetitive behaviors, and comorbid diagnoses create barriers to communication and challenges to sensitive responding. Second, parents themselves may have limited psychological resources, and more negative emotions and perceptions of parenting experiences.

## **Challenges to Parenting and Forming Connections with Children with ASD**

### ***ASD-Related Factors in Children***

ASD is considered a disorder with a biological basis in which symptoms affect a child's ability to attend to others, process emotions, understand others' perspectives, and respond to social information (Capps et al., 1992; Baron-Cohen et al., 2013). Children with ASD display atypical gaze behaviors that negatively impact social experiences (Bedford et al., 2012), such as fewer instances of communicative intent in which eye contact is paired with smiles (Dawson et al., 1990). Moreover, toddlers with ASD who exhibit visual preferences for geometric shapes compared to social images also have poorer language, cognitive, and social skills compared to children who prefer social images (Pierce et al., 2015). These relational and attentional differences negatively impact social experiences and persist across the lifespan (APA, 2013; Ooi

et al., 2016; Newschaffer et al., 2007). The DSM-V's criteria for diagnosing ASD emphasize deficits in two domains: a) "persistent deficits in social communication and interactions (SCI) across multiple contexts" such as deficits in social-emotional reciprocity and nonverbal communication used in social interactions and b) "the presence of restricted and repetitive behaviors, interests, and activities" such as rigidity and insistence on sameness, or restricted interests (APA, 2013; Kanner, 1943). The presence of deficits and behaviors in these domains can vary in terms of severity (i.e., mild to severe), creating a spectrum disorder in which individuals with ASD vary significantly from one another and display different deficits and strengths.

### ***Children's Signaling and Reciprocal Behaviors***

Children with ASD may struggle to attend to the parent, and may signal their needs with less clarity than neurotypical children (Bedford et al., 2012; Koren-Karie et al., 2009; van IJzendoorn et al., 2007). Compared to neurotypical children, to children with intellectual deficits, and to children with language delay, autistic children may also be more inconsistent when expressing needs to parents and less likely to reciprocate when parents respond to their cues (van IJzendoorn et al., 2007). In terms of social behavior, autistic children express affection at lower rates, avoid eye contact, resist physical contact, or exhibit less social initiation (Charlop-Christy et al., 2008; Rimland, 1964; Rogers, et al., 1993). These social deficits cause parents of children with ASD to struggle to decipher their children's cues (van IJzendoorn et al., 2007), resulting in less responsive parenting (Kasari et al., 1998). This additional stress of deciphering unclear cues may contribute to interactions that are less flexible and synchronous (Rutgers et al., 2004). For instance, in children with ASD, cues for social reciprocity, including those for engagement and disengagement, may be subtler and/or more difficult for parents to interpret (Sigman et al.,



2004). This can lead to an additional relational barrier because social reciprocity is thought to provide positive reinforcement for parents when a child is learning a new skill or sharing an experience (Slade, 2009). In a qualitative study in which caregivers with a child with ASD ( $N = 26$ ) or a typically developing child ( $N = 23$ ) were interviewed, 85% of caregivers of school-aged children with ASD reported deficits in reciprocal interactions; specifically, children rarely discussed daily events or internal states (i.e., thoughts, feelings) without the parents feeling as if they were “prying” for information (Keenan et al., 2017). Research also indicates that autistic children may exhibit fewer social-related behaviors such as less frequent eye contact, joint attention, and positive emotions including smiling or shared enjoyment (Adamson et al., 2009; Dissanayake & Crossley, 1996; Kasari et al., 2010), all of which may affect the connections that parents feel with their children. Autistic children’s social and behavioral deficits appear to have detrimental effects on parents, leaving parents struggling to understand their children’s behavior and experiencing their children’s behaviors as inconsistent and sometimes incomprehensible (Keenan et al., 2017).

### ***Children’s Emotional Experiences and Impact on the Caregiver***

Children with ASD display deficits in many aspects of emotionality, including understanding, processing, expressing, and managing emotions (Golan et al., 2008). Specifically, some children with ASD exhibit fewer displays of joy, and more displays of strong and intense negative emotions and/or withdrawal (Doussard-Roosevelt et al., 2003; Grzadzinski et al., 2014). Research findings suggest that these children may exhibit difficulty being soothed by caregivers (Grzadzinski et al., 2014) and exhibit significant mood lability in which the children’s responses feel more extreme and shifts more frequent than caregivers judged was typical for same-aged neurotypical children (Keenan et al., 2017). These emotional-related symptoms create challenges

for parents to feel connected with their children and will affect relationships the child forms with parents, peers, and others over time.

As expected, autistic children who express lability and high negative reactivity require more emotion regulation efforts from parents, and they often struggle to engage in these regulatory behaviors independently (Gadow et al., 2004; Hirschler-Guttenberg et al., 2015). In fact, researchers have suggested that positive and negative emotion regulation may be an early marker for an ASD diagnosis (Zwaigenbaum et al., 2013). As a result, a growing literature focusing on co-regulation between mothers and children with ASD has emerged (Doussard-Roosevelt et al., 2003; Gulsrud et al., 2010; Valentovich et al., 2018). Mothers appear to play a significant role in supporting their children in regulating overreactivity and deescalating from negative emotional states (Hirschler-Guttenberg et al., 2015; Hoffman et al., 2009; Wilson et al., 2013). The emotional support provided by the parent are important when we consider the transactional model (Sameroff & Fiese, 2000) and the relationship between self-regulation and other-regulation (Ting & Weiss, 2017). Specially, in the ASD community, parent reports support a phenomenon referred to as emotional transmission, whereby a parent notices that their emotions affect the behavior or emotion of their child, and vice versa (Zhou & Yi, 2014). Given that the emotional states of both parties within a dyad influence the other, and children rely on parents for support in emotion regulation, this logic supports the conclusion that bolstering a parents' emotional bank of positive emotion and positive relationship representations is critical to support the dyad over time.

### ***Repetitive Behaviors and Sensory Processing Deficits***

A symptom from the restricted and repetitive patterns of behavior domain within the DSM-V criteria is the sensory processing deficit in which sensory over-responsivity (SOR)

presents a challenge for approximately 56 – 70% of those living with ASD (APA, 2013; Baranek et al., 2006; Ben-Sasson et al., 2013). SOR includes intensified and prolonged negative reactions to quotidian sensory experiences including commonplace sounds, smells, and movements (Reynolds & Lane, 2008). Findings from one study suggest that SOR increased maternal stress above and beyond the related stress of raising a young child with ASD (Osborne et al., 2008). Other behaviors that are extremely difficult to experience and manage include self-injurious behaviors such as self-biting or head-banging (Rutter & Lockyer, 1967), which cause distress to the child and also to those who care for the child. The difficult behaviors exhibited by a majority of children with ASD require more psychological effort from a parent, and may in turn create a barrier to connectedness on the part of the parent.

### ***Comorbid Diagnoses***

The social, emotional, and behavioral difficulties mentioned in the previous section can be exacerbated by additional diagnoses that can add more parenting stress (Ben-Sasson et al., 2013). More than 33% of children with ASD also receive clinical comorbid diagnoses. Some of the common comorbidities, that may warrant differential diagnoses, include developmental conditions such as language delay (Rimland, 1964; Rutter, 1978) or intellectual disability (Rivto & Freeman, 1977), and psychiatric conditions such as ADHD (Leitner, 2014; Skokauskas & Gallagher, 2012), an anxiety disorder (Gadow et al., 2004), or a depressive disorder (Klinger et al., 2014). Associated medical complications include issues such as gastro-intestinal disorders, sleep disturbances, or seizures (Klinger et al., 2014). Each of these additional diagnoses can affect the daily functioning of a child as well as the family-unit. Moreover, research indicates that co-occurring emotional and behavioral symptoms are associated with more caregiver distress compared to core ASD-related symptoms alone (Lecavalier et al., 2006).

Any comorbidity mentioned above can exacerbate ASD symptoms and negatively impact children and caregivers. For example, highly severe symptoms of anxiety or language delay that negatively affect that child's ability to function or engage in common activities at home, with peers, and in community settings, also negatively affect their quality of life (Dovgan & Mazurek, 2019; Storch et al., 2012). Higher levels of problem behaviors are associated with more stress in mothers (Estes et al., 2009). Additionally, comorbid diagnoses create more challenges for parents in terms of financial costs for increased levels of care (Kalb et al., 2012) and increased burdens on time (Peacock et al., 2012). Taken together, these strains negatively affect familial resources, mental health, and amplify the stress and challenges associated with providing care to a child with ASD (Dovgan & Mazurek, 2018). For parents trying to provide care while managing depleting resources, the quality of interactions between the parent-child dyad may be more at-risk as well.

Overall, ASD-related factors such as the aberrant ways in which children communicate and engage in reciprocal interactions create barriers to effective and satisfying dyadic communication. Labile and intense emotional experiences also put additional strains on the dyad and both members are at-risk for unintentionally influencing the other to experience more negative emotions over time. Finally, repetitive behaviors, SOR, and increased negative behaviors or additional challenges associated with comorbidity also can negatively affect parent-child interactions. Taken together, ASD is a neurodevelopmental disorder that affects children in several ways. Importantly, the core symptoms of ASD have the potential to lead to negative relational impacts with their parents who are primary caregivers of children.

## **Parent-Related Factors and Parental Experiences**

### ***Mothers' Limited Psychological Resources***

Historically, little support was given to mothers of children with ASD, particularly because they were blamed for their children's diagnoses and referred to as "refrigerator moms" (Bettelheim, 1967). This led to high levels of guilt in many families, especially in mothers who were trying to care for their children while being criticized for their poor parenting abilities. Unfortunately, due to the lack of research, many professionals accepted this idea until the work of Rimland (1964), a psychologist and a father of a child with ASD, which changed the popular belief and identified autism as a neurodevelopmental disorder. Our perceptions toward mothers have shifted; however, research continues to find mothers of children with ASD more vulnerable to depression and at higher risk for displaying high levels of stress (see Bonis, 2016 for a review; Bristol & Scholoper, 1984; Hoffman et al., 2009; Wolf et al., 1989) and emotional problems (Falk et al., 2014; Pottie et al., 2008; Teague et al., 2018). Earlier research suggests that parents with poorer psychological resources are at risk for negative outcomes (Belsky, 1984). More specifically, an extensive body of literature addresses the at-risk mental health of those involved in caring for children with ASD. Depressive symptoms include sustained negative affect (American Psychiatric Association, 2013) and recent research suggests that symptoms may include habitually down-regulating and infrequently up-regulating positive emotions (Vanderlind et al., 2020). For mothers of children with ASD, depressive symptoms mediate the relation between negative child behavior and family functioning (Jellet et al., 2015). Other studies and meta-analyses have found that mothers of children with ASD report higher stress, anxiety, psychological distress, and lower quality of life compared to parents of neurotypical children or children with other developmental disabilities (Costa et al., 2017; see Karst & Van Hecke, 2012 for a review; Vasilopoulou & Nisbet, 2016), all of which are associated with increased negative emotions and decreased positive emotions. Higher stress levels in parents are also related to

decreased treatment effects in children (Osborne et al., 2008; Robbins et al., 1991; Stadnick et al., 2015), suggesting that maternal well-being may be an essential aspect of a family-centered treatment plan for an ASD family. Overall, decreased psychological resources are associated with negative outcomes including several catalysts associated with decreases in positive affect for parents, which in turn, can negatively affect the family unit and the child.

### ***Parents' Emotional Experiences Over Time***

Previous research suggests many parents of children with ASD feel grief related to their child's initial diagnosis as well as anger, resentment, shock, fear, and hopelessness; many subsequently struggle to resolve their emotions (Fernández-Alcántara et al., 2016; Ooi et al., 2016). Parents may experience resentment and anger toward medical professionals and those who they feel did not take their concerns seriously. Crown (2009) provides an account of the first few years of caring for a young child with ASD in which she describes being “pinned down” from the combination of the quotidian demands (i.e., work), caring for her children (i.e., childcare, planning services), and managing psychologically difficult emotions (i.e., grief, loss, anger). The emotional state of mothers caring for children with ASD is critical because their mental health can negatively influence both their interactions with their child and their ability to attend to their child with ASD (e.g., finding resources for their children and supporting their child's optimal development; Crown 2009). Research suggests that the relation between higher parenting stress and child behavior in children with developmental delays is transactional such that higher parent-related stress is associated with greater child problem behavior, which can serve to exacerbate parent-related stress over time (Hastings, 2002; Neece et al., 2012; Orsmond et al., 2003). Moreover, findings suggest that mental health difficulties for parents of autistic children reduce parents' sensitivity (see Karst & Van Hecke, 2012 for a review), rendering

children more vulnerable to forming insecure attachments (see Teague et al., 2018, for a review). Overall, the task of parenting autistic children is more challenging than parenting neurotypical children, requiring additional emotional and cognitive resources, and the stress attendant on having a special needs child may result in parents having fewer psychological resources from which to draw.

However, it is important to note that stressful challenges often become manageable over time and consequently, feelings evolve as well. In other words, it is necessary to remember that caring for a child with ASD can also yield positive outcomes for parents over time. For instance, researchers conducted a metasynthesis of 31 articles exploring parents' experiences of caring for a child with ASD within a theoretical framework called the Family Life-Cycle Model (Carter & McGoldrick, 1988). In this model, they identified six phases which are not strictly time dependent, and any of which may be experienced more than once: a) prediagnosis, b) diagnosis, c) family life adjustment, d) navigating the system, e) parental empowerment, and f) moving forward (DePape & Lindsay, 2015). In the final phase, the researchers identified a theme (*Benefits*) in which parents described high levels of closeness to their child or spouse (Hock et al., 2012; Midence & O'neill, 1999), greater appreciation of their child (Shu et al., 2001), or a meaningfulness that affected their spiritual or worldview (Luong et al., 2009). While parents may experience high levels of connection, appreciation, or meaning in the later stages, the initial phases include high levels of uncertainty and several unavoidable challenges that require caregivers to experience and manage difficult emotions and challenging situations that increase stress levels and can negatively affect their parenting patterns (Reed & Osborne, 2014).

### ***Parents' Perceived Experiences of the Parent-Child Relationship***

Parenting satisfaction and feelings of closeness to one's child are important constructs regarding the parent-child relationship. Parental satisfaction refers to parental feelings (e.g., contentment, gratification) with respect to the parenting role and responsibilities toward the child (Mouton & Tuma, 1988). Within the general population, previous research suggests that parents with higher levels of stress are at-risk for higher levels of dissatisfaction (Feiring, 1975) and in turn may respond more insensitively to their children (Mouton & Tuma, 1988). However, marital relationship satisfaction has been suggested to buffer the impact of stress on maternal depression in parents of autistic children (Weitlauf et al., 2014). Additionally, satisfaction with services or interventions for their children are associated with less stress and higher levels of cooperation (Moh & Magiati, 2012), but less is known about correlates of parenting satisfaction, an important relationship outcomes that is largely understudied in the ASD literature. Through two separate investigations, Conti (2015) assessed the association between parenting satisfaction and two types of parenting goals: a) self-image parenting goals (i.e., how one's child reflects on oneself) and b) compassionate goals (i.e., understanding and meeting the unique needs of one's child). In the first study, she compared mothers of children with and without ASD. While mothers of children with ASD highly endorsed compassionate goals, they were also found to be less satisfied with themselves as parents and exhibited lower levels of life satisfaction than mothers of neurotypical children. In the second study, only compassionate parenting goals, not self-image goals, significantly predicted parenting satisfaction (Conti, 2015). It appears that holding compassionate parenting goals creates two-fold benefits for the parent-child dyad. Specifically, compassionate parenting goals may enable mothers to view the world from the child's perspective, to value the child's interests and abilities, and to account for the child's individual needs, subsequently enabling the mother to feel more satisfied with her role. This line of research



suggests that activities that support parents in considering how their own behaviors affect their children, how their children benefit from the care the parent provides, or the positive impact associated with the parent-child connection could be helpful to increase parenting satisfaction in this population.

A construct closely related to relationship satisfaction is feelings of closeness with the child. Parents of children with ASD experience daily interactions with a child who lacks the social skills necessary to enhance connections with others (both in terms of social initiation and social reciprocity), and who may be emotionally unresponsive (Doussard-Roosevelt et al., 2003), lack communication skills (Osborne & Reed, 2010), or be physically hypersensitive (Baranek et al., 2006; Ben-Sasson et al., 2013), all of which may affect the extent to which a parent feels close to their child. Currently, research findings addressing feelings of closeness from the parents' perspective are inconsistent, which may be attributed to variations in methodology. For example, a 2009 study by Hoffman et al. comparing parents of children with ASD to parents of neurotypical children used subscales (e.g., Attachment subscale) of the *Parenting Stress Index* (PSI; Abidin, 1995), a measure that yields a Total Stress Score and is used to identify dysfunctional systems within a parent-child dyad. Compared to parents of neurotypical children, parents of children with ASD reported higher stress in the Child Domain at the 99<sup>th</sup> percentile. In contrast, parents of both children with ASD and neurotypical children were at the 50<sup>th</sup> percentile on the Attachment subscale, suggesting that despite high stress levels parents did not differ in their feelings of closeness to their children with ASD. In contrast, findings from another study using five items from the Child Reinforces Mother subscale on the PSI (Abidin, 1997), and an additional 10 items assessing closeness, found the opposite effect (Hoppes & Harris, 1990). Comparing caregivers of either ASD or Down Syndrome children, parents of children with ASD

reported feeling less rewarded in their interactions with their children and perceived their child as less attached to them. Overall, using different items from the PSI (i.e., Attachment subscale, and Child Reinforces Mother subscale plus other closeness items) revealed discrepant findings regarding feelings of closeness within parent-child with ASD dyads suggesting that these must be capturing different aspects of mother-child closeness.

Studies using different measures echoed the findings of lower levels of closeness. For instance, Keenan and colleagues (2017) found that some parents reported feeling emotionally hurt by their children's emotional non-responsiveness, perceived lack of empathy, and inability to understand their emotional states. Teague et al. (2018) compared parents of children with developmental delay (DD; children under six years old) and intellectual impairment/intellectual disabilities (II/ID; children over six years old), to parents of children with ASD and found that parents of children with ASD experienced relatively high levels of stress, anxiety, and reported greater levels of attachment insecurity in their children. Attachment security was measured using the Child-Parent Relationship Scale (C-PRS; Driscoll & Pianta, 2011). Results suggest that compared to parents of children with II, ID, or DD, parents of children with ASD reported feeling more conflict and less closeness in the attachment relationship, and more inhibited attachment behaviors (e.g., lacking a preferred caregiver, infrequently seeking comfort when distressed) from their children (Teague et al., 2018). Finally, a study conducted by Abbeduto and colleagues (2004) assessed the quality of mother-child relationships using the Positive Affect Index (PAI; Bengtson & Black, 1973). Mothers of children with ASD perceived less closeness in their relationships when compared to mothers of children with Down syndrome, and they reported the least perceived reciprocated closeness compared to mothers of children with Down syndrome or Fragile X syndrome (Abbeduto, et al., 2004).

Extant studies addressing parental closeness suggest that although assessing feelings of closeness may be a useful tool to understand the extent to which parents feel connected to their children with ASD, current findings yield a mixed picture. Given the benefits of connectedness in the parent-child dyad, some compelling evidence that feelings of parenting satisfaction are enhanced when parents take their children's perspective into account and that caregivers of children with ASD tend to lack feelings of closeness with their children, it is imperative to identify factors that can improve feelings of connection in parent-child dyads.

### ***Reflective Functioning in ASD Dyads***

Few studies have explored RF in parents of children with ASD potentially due to the several barriers present in the symptomology associated with ASD. However, in parents of children with ASD and intellectual deficits, an emerging literature has focused on maternal insightfulness, a construct with the same theoretical underpinnings as reflective functioning (Feniger-Schaal et al., 2019; Oppenheim, et al., 2009, 2012). Theoretically, the task of trying to mentalize on behalf of one's child with ASD has been labeled "mentalizing the unmentalizable" (Slade, 2009) due to the ASD-related biological constraints that deter children from attending to social stimuli early in development (Klin et al., 2009; Porges, 1995; Volkmar et al., 2004), the child's inability to recognize others' mental states (Baron-Cohen, 1995), and the child's ineffective or unclear communication (Rutgers et al., 2007; Slade, 2009). Take the example of a parent and a nonverbal child with ASD who are walking down the street and pass a dog on the opposite side of the street. If the child begins crying, to create an appropriate and sensitive response, the parent must first mentalize, a process that includes thinking about what the child is feeling (e.g., whether the child is sad, scared, overwhelmed) or what the child is thinking (e.g., *I am scared, I want to get away, I don't know what to do*). Depending on what the parent

hypothesizes, they may soothe the child by hugging the child, and may label the fearful emotion of the child and/or tell the child that they are safe. In theory, the child could be trying to communicate several different needs and the parent's goal is to decipher the child's cues in the situation to accurately understand what the child may be experiencing. This is a challenging task for all parents and is even more difficult for parents of autistic children due to the child's persistent and pervasive difficulties associated with communicating their needs in a way in which the parent can understand. Despite valiant efforts of dedicated parents, the child's aberrant social communication skills adversely affect parents' abilities to infer their children's internal states from their expressed behaviors (Keenan et al., 2017). While RF is a critical component of parenting sensitivity, including among parents of autistic children, developing RF for an autistic child may be quite challenging because they may not provide many clues as to what they are thinking and feeling.

In sum, the parent-related factors such as both parents' strained psychological resources and the persistence of negative emotional experiences in the initial stages of the ASD journey are associated with increased negative emotions and create barriers to parents experiencing positive emotions. Parents may perceive a lack of closeness to their children and less satisfaction in the parent-child relationship, resulting in decreased feelings of positive connection and positive feelings associated with the parenting role, respectively. Also, the difficulties associated with accurately understanding the child's internal states can be associated with increased negative emotions in both mothers who want to understand their children and children in ASD who are being misunderstood. Together, all of these factors can create barriers for mothers to provide sensitive parenting to their children with ASD. As a result, interventions aimed at enhancing positive emotions, decreasing negative emotions, increasing parenting satisfaction, increasing

feelings of closeness, and increasing the ability to mentalize in parents could be beneficial for this at-risk population.

### **Existing Interventions to Support Parents of Children with ASD**

Over the past several decades, numerous interventions have evolved in the service of improving ASD symptomology and family functioning. Parent involvement in treatment is considered a best practice recommendation by the Division for Early Childhood of the Council for Exceptional Children, the National Association for the Education of Young Children, as well as of many evidence-based approaches, practices, and effective treatments (Copple & Bredekamp, 2009; National Autism Center, 2009; National Research Council, 2001; Sandall et al., 2005). Typically, parents receive education and training in parent-directed interventions, many of which focus primarily or solely on parent adherence to behavior protocols and child outcomes (e.g., Rocha et al., 2007). Additional investigations have expanded to include parent-delivered interventions that target both child outcomes such as social communicating and social skills, as well as parent outcomes such as stress levels (Lewallen & Neece, 2015). While there has been some movement in the field in the direction of assessing parent outcomes, it should be noted that research focused on parent-based outcomes are still largely a minority (Karst & Van Hecke, 2012).

One common approach to support parents consists of parent training (Kaminski et al., 2008). Although parent training is a broad term often encompassing more than one technique, researchers have delineated two distinct categories: a) the parent-mediated intervention, and b) parent support or parent education (Bearss et al., 2015). The parent-mediated intervention category is skills focused, places the child as a direct beneficiary, and includes training in managing child's core symptoms (e.g., social communication, play) and maladaptive behaviors

(e.g., disruptive behavior, toileting). This type of training can be used to not only build, but also to maintain and generalize children's skills (Ingersoll & Dvortcsak, 2006). In contrast, the parent support category is knowledge-focused, places the child as an indirect beneficiary, and includes care coordination and psychoeducation. While there are fewer empirical studies of this type of training than parent-mediated interventions, psychoeducational programs have been shown to lower levels of stress in parents (Feinberg et al., 2014) and also improve adaptive skills in children (Tonge et al., 2014).

A recent randomized control trial investigated the outcomes associated with both parenting coaching (i.e., parent-mediated) and psychoeducation approaches. Researchers compared the effects of two 10-week programs with 1-hour of support per week from a trained interventionist (Kasari et al., 2015). Parents received either: a) an individualized intervention that included coaching during play interactions to enhance joint attention skills in their children (i.e., Joint Attention Symbolic Play Engagement Regulation; JASPER, UCLA, 2005 unpublished manual), or b) a psychoeducation intervention that incorporated ASD education and individualized feedback (Brereton & Tonge, 2005). Both interventions were associated with positive outcomes for children and parents such that children exhibited increased levels of joint engagement in the JASPER treatment group and parents reported lower levels of parenting stress associated with child characteristics in the psychoeducation treatment group (Kasari et al., 2015). However, as is the case in assessments of many parent-mediated interventions (see Oono et al., 2013 for a review), both approaches focused heavily on child outcomes (i.e., joint attention and play) with less emphasis on parent outcomes (e.g., parenting satisfaction). On the other hand, the primary focus on child outcomes makes sense considering the ultimate goal of enhancing a child's ability, skill-set, and overall well-being.

Despite many gains in the area of parent training approaches, researchers and policy leaders remain concerned that not all parents appear to benefit equally from interventions focused on parent-coaching or parent-implemented interventions (Oono et al., 2013; Siller et al., 2018). Perhaps parents can benefit from, and may even need more targeted support to be effective interventionists. To date, approaches have included the provision of education, support, and strategies for parents to teach their children. However, less work has focused on enhancing parents' ability to respond sensitively to children's needs (Poslawsky et al., 2015), as an indirect means of helping children. To the best of my knowledge, no studies aim at supporting and measuring parents' abilities to feel connected to their children, a psychological strength that could in turn support sensitive caregiving.

### ***Parent-focused Interventions***

Strengthening parents' psychological resources is an essential public health goal, and several theoretical and therapeutic approaches have emerged to support maternal well-being. Approaches such as problem-solving education (cognitive intervention; Feinberg et al., 2014), self-compassion (Neff & Faso, 2015); mindfulness-based interventions (Ferraioli & Harris 2013; Lewallen & Neece, 2015), and positive adult development (positive psychology practice; Dykens et al., 2014) have been associated with positive outcomes for parents or children. Many of these interventions focus on parental mental health and are associated with several benefits for caregivers and children, but these approaches do not directly target a parent's perception of their relationship with their child. Considering that some of the joys of parenting are associated with the feeling of being close with one's child (Nelson et al., 2013), and parents of autistic children experience fewer of these moments, then perhaps helping parents emphasize their connection could be associated with benefits for the parent and potentially the autistic child.

Attachment-based interventions for parents often target parental behavioral responsiveness, as this is a central tenet of attachment theory. A ground-breaking study by Siller and Sigman (2002) targeted caregiver responsiveness through caregiver synchrony during play interactions and unveiled a developmental link between parental responsiveness and child communication skills longitudinally. Caregiver synchrony was assessed through the use of: a) indicating behaviors (i.e., showing, pointing to, or offering toys), b) verbalizations, and c) undemanding verbalizations. These behavioral categories were coded in 25 caregiver-child dyad interactions to predict child communication behaviors, including joint attention (both responsive and initiative joint attention) at 1-year, as well as language gains at 1-year, 10 years, and 16 years. Overall, higher levels of caregiver synchrony were positively correlated with children who developed greater communication skills at all three time points (Siller & Sigman, 2002). With a small sample size requiring the use of nonparametric statistics, the authors also reported that caregivers of children with ASD are inclined to use too many demands and show less synchrony. However, the extent to which parents may have benefited from this intervention remains unknown.

An emerging intervention used to assess parenting responsivity is called Focused Playtime Intervention (FPI), a treatment approach for which parent and child and parent-related outcomes have been assessed; there are mixed findings. With regard to child outcomes, Siller and colleagues (2014) assessed the effects of FPI and attachment behaviors in children. Compared to a control group (Parent Advocacy Coaching), the children in the FPI group displayed fewer avoidant behaviors during reunions (Siller et al., 2014), suggesting that parent responsiveness affects child-attachment related behaviors. Another study aimed to dissect FPI's impact on language ability found a conditional effect for children, suggesting that those with



more impacted expressive language abilities experienced language gains while children with more advanced language skills appeared to need a stronger intervention approach to exhibit language gains (Siller, et al., 2014).

Focusing on assessment of change in parent behavior, parental responsiveness, self-reflection, and self-evaluation have been targeted in previous studies. For example, Kasari et al. (2014) also implemented FPI to increase parental responsiveness, with the goal of increasing joint attention and language outcomes in children with ASD. Compared to a control group, the parents in the treatment group exhibited higher levels of parental responsiveness, but there were no significant effects on the child outcomes. Also, parents displayed drop-off effects in which the increased responsiveness was not maintained 12-months later (Kasari et al. 2014). In another study, FPI was associated with increases in parental responsiveness (Siller et al., 2014) and was assessed in the first clinical trial to reveal increases in parents' capacity to engage in reflection and self-evaluation (Kasari et al., 2014; Siller et al., 2018), a construct similar to RF. Taken together, if we embrace the conclusion that targeting caregiver responsiveness with FPI is associated not only with positive changes in parenting behavior but also with changes in RF-related constructs, then perhaps helping parents focus on times in which they are responsive with their children could also lead to benefits for these caregivers who participate in a savoring intervention that focuses on memories of responsiveness.

### ***Savoring***

An intervention rooted in the theory of positive psychology, a reflective exercise that may reduce the impact of parenting stressors, is savoring, or the process of enhancing and prolonging the emotions attached to positive experiences. This activity can be applied to future, ongoing, or past experiences, referred to as anticipation, savoring the moment, or reminiscence, respectively

(Bryant, 2003). Savoring is affected by savoring beliefs, or individuals' capacity to acknowledge and embrace positive experience, and individuals' beliefs must therefore be controlled for when implementing a savoring intervention; the extent to which people engage in savoring events could affect the extent to which participants benefit from the savoring intervention (Bryant, 2003). Savoring is associated with numerous positive emotional outcomes (Bryant & Veroff, 2007) including increases in happiness (Jose et al., 2012; Quoidbach et al., 2009), improved depression (Hurley & Kwon, 2011) and negative mood (McMakin et al., 2011), and decreases in work-family conflict (Camgoz, 2014). Furthermore, savoring is positively associated with gratification and optimism, and negatively associated with hopelessness, anhedonia, and neuroticism (Bryant & Veroff, 2007), some of which are present in parents of autistic children. Reminiscence savoring is believed to generate positive emotions, a process that may be inherently rewarding (Speer et al., 2014). Further, increasing positive affect appears to enhance well-being and capacity to cope with negative emotions (Carl et al., 2013). Present moment or anticipatory savoring completed with high fidelity (i.e., participants who completed savoring six or seven days in a seven-day intervention) was associated with similar positive outcomes (i.e., decreased depressive symptoms and increased happiness over time) for adults 60 years or older (Smith & Hanni, 2017). Taken together, savoring appears to boost positive emotions for adults across the lifespan and to decrease negative emotions, which in turn, appears to lead to higher well-being.

### ***Relational Savoring***

In addition to positive experiences in one's life, experiences occurring in specific relationships can be savored, which might result in a greater sense of personal connection (Bryant et al., 2005). This specific type of savoring, termed relational savoring (RS), guides an

individual to focus on a positive relational experience with someone close to them and if possible, an attachment-based moment of felt security with another person (Bowlby, 1973; Borelli et al., 2014; Burkhart et al., 2015). The RS intervention branches off from traditional savoring because it focuses on memories within attachment relationships that include safe-haven moments, secure base moments, or moments in which the parent felt extremely close or connected (Bowlby, 1973). Given that RS involves honing attentional resources on positive relational memories (Borelli, Bond, et al., 2020), this could be a critical intervention for parents of children with ASD considering that they may be highly stressed, overwhelmed, or anxious as they are concerned and trying their best to meet the needs of their children, and they may be simultaneously struggling to manage or implement the various levels of care to help their children flourish.

In addition to attachment theory, another major theoretical framework supporting savoring and RS is the *broaden-and-build model* of positive emotions, a theory purporting that positive emotions not only produce joy within the moment but also over time (Fredrickson, 1998, 2001, 2013). Research supports that positive emotions have the capacity to broaden an individual's thought-action repertoire to build positive and beneficial resources, which then lead to long-term flourishing (Fredrickson & Losada, 2005). Furthermore, experiencing positive emotions is believed to “undo” the negative physiological outcomes associated with experiencing negative emotions (Fredrickson & Levenson, 1998). As a result, this theory proposes that positive emotions create an “upward spiral” that enables people to thrive on several levels, including an interpersonal level (Fredrickson, 2001). Following this logic, an individual who engages in RS will experience greater positive emotions immediately and these feelings could magnify over time as well (Garland et al., 2010).

Based on the broaden-and-build theory, RS could be a useful intervention for mothers of ASD children to experience elevated positive emotions, enhance their receptivity to broadening their perspectives, and potentially strengthen their parent-child interactions and resources associated with their relationships with their children (Fredrickson, 1998). This idea parallels findings within romantic relationships in which more positive interactions predict enhanced relationship satisfaction (Gottman et al., 1998). Given the increased difficulty faced by parents of autistic children when interpreting their children's inconsistent signals coupled with their experience of high levels of stress and negative emotions, there is a need to test the efficacy of interventions that enhance parents' positive emotions, parenting satisfaction, and feelings of closeness with their children. Relational savoring offers a potential solution as the intervention guides parents to focus on times in which they were able to watch their children grow, effectively soothe their children, or feel close and connected with their children. Theoretically, because RS guides individuals to focus on attachment-related memories in which parents provide care or feel close and connected to their child, the broadening process would extend to the internal working model of parenting or caregiving (Borelli et al., 2017). For example, parents who practice RS are provided the opportunity to internalize the moments in which they cared for their children in a positive way. This process helps parents to enhance their perspective of who they are as a parent and allows them to experience difficult or taxing parenting situations (secure base or safe haven moments; or moments of closeness) with greater comfort and less difficulty. Focusing on times in which parents provided care for their children, they felt close or connected to their child, or parents acted as a secure base for their child to support their children's growth could be crucial for parents who may not receive messages from their autistic children regarding

the extent to which the child benefits from the care and support their parents provide or may not explicitly share with their parents consistently or at all.

To date, several studies have tested RS in comparison to personal savoring (PS) in which people savor happy, calm, or peaceful moments when they were alone. Several promising results include lower heart rate for older adults during RS (Borelli, Bond, et al., 2020), greater reductions in negative emotions for those with attachment anxiety and negative emotions in at-risk young men (Wang et al., 2019), higher relationship satisfaction and closeness after the savoring activity in parents with higher attachment avoidance (Burkhart et al., 2015), and greater positive emotions (Borelli et al., 2015). One key study is helpful when considering parents of young children. An examination by Burkhart et al. (2015) compared a one-time administration of RS to PS in parents of young children. The results indicated that compared to parents in the PS condition, parents who participated in RS reported lower positive emotion following the savoring activity (Burkhart et al., 2015). This finding, in addition to decreases in negative emotions post-savoring was also found in a recent investigation of RS and PS as interventions for anxious mothers of children with ASD. These results are encouraging in terms of what they have to offer parent-child dyads with ASD, in which the children struggle to connect in socially normative ways and to reciprocate social feedback that is critical to parental well-being, and because parents experience higher levels of stress and negative emotions, as they manage and provide high levels of care over time. RS could be important for this population of parents who experience high levels of distress, high caretaking demands, and may lack the social connection with their children that are essential in the parenting process to enable parents to endure high levels of stress associated with parenting a child with unique needs. What remains unknown is how RS compares to PS in mothers of children with ASD.

## **Current Studies**

Despite an increasing number of resources and intervention approaches available for children with ASD, there are fewer interventions supporting parents or custodial caregivers who are the primary source of care, support, and guidance of children within the ASD population. Empirical work suggests that parents of children with ASD experience barriers when engaging in RF as well as parenting sensitivity or responsivity because children lack clear communication about their needs and provide unclear feedback to the parent, leaving a parent confused and unsure how to meet the needs of their child (IJzendoorn et al., 2007; Slade, 2009). This biological predisposition in children has the potential to negatively affect a parent's ability to mentalize as well as respond sensitively to their child's needs. In turn, the inability to effectively meet their children's needs can impede parents' experience of positive emotions and put them at risk for lower well-being. Few interventions focus on enhancing parenting sensitivity or parental responsivity and to the best of our knowledge, no study to date has examined whether an attachment-based savoring intervention such as RS can positively affect parental mentalization or parent sensitivity or responsivity.

Savoring is also associated with change in emotional experience, namely, lower negative emotions and depressive symptoms and higher positive emotions (Hurley & Kwon, 2013). Moreover, PS and RS are associated with higher levels of positive emotion and lower levels of negative emotion in different populations. It remains unknown whether RS could lead to similar benefits for parents of children with ASD. The investigation by Burkhart and colleagues (2015) suggests that a single online exposure to RS was associated with long-term increases in parenting satisfaction. These promising findings are important to replicate in at-risk populations who also may benefit from inexpensive and time-limited interventions.

Parents of autistic children are at risk for high levels of stress and depressive symptoms and are caring for children who are biologically constrained regarding social output and therefore are unable to reciprocate the type of affection or social feedback that could benefit parents. These parents frequently report higher stress levels and self-reported stress is critical to assess for individual differences among mothers and these stress levels could affect the extent to which parents maximize gains from an intervention. Second, children's social feedback can ideally serve as a vital form of positive reinforcement that parents are evolutionarily programmed to accept from their nonverbal and growing child, and may be similar to a psychological fuel that enables parents to continue executing parenting behaviors in a highly sensitive and compassionate manner that their child with ASD requires. Taken together, investigating new approaches that may allow parents to experience caretaking moments in a new and positive manner may bridge this gap for some parents of autistic children.

We posit that RS could be one of the first interventions to meet this critical need and help us understand how to help parents who are faced with parenting this growing population while experiencing an array of unique challenges. In the proposed project, we aim to assess mothers of autistic children in two studies assessing the effects of RS. In both studies, we will randomly assign participants to one of two conditions: 1) *relational savoring (RS)*, wherein participants are explicitly directed to focus on a positive memory involving feelings of closeness or connection occurring within the parent-child relationship, 2) *personal savoring (PS)*, wherein participants will be directed to focus on an intrapersonal (occurring within the self and not related to the relationship being examined) positive emotional event. Study 1 will include a cross sectional investigation using an online questionnaire modeled after the Burkhart et al. (2015) study. Study 2 will include in-person data collection with participants living in Greater Los Angeles County

and will support richer data analysis from in-person observation data and intervention delivery.

Thus, these studies are positioned to contribute to the move in the treatment literature to

understand what works for whom.



## Chapter 2. Study 1

### Research Questions and Hypotheses

The current study investigated the following research questions:

#### *Question 1*

Compared to PS, does participation in a RS intervention lead to significant positive changes in internal states of mothers of children with ASD?

**Hypothesis 1a.** Relative to mothers in the PS condition, mothers in the RS condition will report greater increases in parenting satisfaction and feelings of closeness as well as greater decreases in negative emotions from pre-savoring to post-savoring, whereas we expect increases in positive emotions for participants in both conditions.

#### *Question 2*

Does stress moderate the effect of RS on the outcome measures?

**Hypothesis 2a.** Relative to mothers with lower baseline stress, mothers who report higher stress levels at baseline will display stronger effects of RS (i.e., lower negative emotions, higher relationship satisfaction, increased feelings of closeness to their child). This hypothesis is based on the argument that parents high in stress may feel more isolated, psychologically depleted, and struggle with many of the aspects of parenting (Catalano et al., 2018; Deater-Decker, 1998); high stress mothers may have the most to gain from the intervention that normalizes the difficulties associated with ASD parenting and highlights relational experiences in which mothers recall a time when they fostered their children's growth or provided comfort and safety.

## **Methodology**

### ***Participants***

Inclusion criteria were that mothers must have a child with an ASD diagnosis (per parent report) and the child must be between the ages of three and seven. Exclusionary criteria included the mother's inability to read and speak English at a 5<sup>th</sup> grade reading level. Mothers were excluded if their child had a comorbid diagnosis of psychosis or neurological disorder (e.g., cerebral palsy).

Study 1 recruited female custodial parents (adoptive or biological parents;  $N = 282$ ). A total of 84% of participants were living in the United States. Of the larger sample, we collected demographic information approximately 268 mothers ( $M_{age} = 33.27$  years,  $SD_{age} = 5.77$  years), for the majority of the demographic variables. These mothers reported having a child with ASD ( $M_{age} = 4.79$  years,  $SD_{age} = 1.31$  years) and reported the following racial backgrounds: White (66%), Latino (11%), Asian (5.7%), more than one race (6.6%), African American (3.5%), Native American (1.1%), and Other (1.4%). In terms of socioeconomic status, about half of the participants earned below \$40,000 per year (34%), or \$41,000 – 60,000 (24%) and the remaining half earned \$61,000 – 80,000 (15%), \$81,000 – 100,000 (8%), \$100,000 – 120,000 (7%), and greater than 120,000 (7%). Mothers has completed High school (10.1%), Some college (32.6%), Community college (11%), Bachelor's degree (25.5%), Graduate degree (14.5%), or None of the above (1.1%). Most of the mothers had a partner (87%). Mothers reported being unemployed (25.5%), or being employed full-time (23.1%), part-time (12.8%), self-employed (6.8%), or other (14.2%). Most mothers had no additional children with ASD (64.2%), or reported one other child with ASD (21.6%), two additional ASD children (6.7%), or three or four other ASD children (2.5%). Mothers reported having one other child without ASD (39.4%), two other

children (16%), three other children (6.4%), or four or five other children (1.1%) without ASD. For the children with ASD of the mother participants, the ratio of boys to girls was closer to 3:1. The majority of the mothers (91.8%) and their partners were biologically related to the target child with ASD (73.4%), followed by only the mother (18.4%), only the partner (1.1%), or neither the mother or partner (1.8%). About half of the mothers (49%) reported that their child with ASD received the gold-star assessment for ASD, the Autism Diagnostic Observation Schedule (Lord et al., 2012), whereas the remaining mothers were unsure (36.5%) or selected “no” (8.5%).

### ***Procedure***

This study was approved by the Institutional Review Board at the University of California, Irvine (HS# 2017-3707). In Study 1, cross sectional data were collected with one sample of mothers who were randomly assigned to receive the RS or PS intervention. Participants completed an online questionnaire provided through Qualtrics, a secure online survey platform (Qualtrics, 2020). First, they read an online consent form and answered two eligibility questions (e.g., are you a mother of a child with ASD?). Participants whose answers demonstrated that they were ineligible to participate were directed to the final page of the study that thanked them for their participation. In addition, the survey was set up to ensure no participant could reenroll in the study at another time. Participants completed the entire study through the online questionnaire that included pre-measures, the online intervention, and post-measures. The online study took approximately one-hour to complete, and mothers were compensated \$20 for their responses.

### ***Measures***

#### **Independent Variables.**

The protocol for the savoring exercises was designed for parents of young children (Burkhart et al., 2015). The language was modified from the initial protocols for applicability to ASD parents. During both conditions (RS and PS), mothers (a) completed an emotion rating scale, (b) read instructions describing the goal of the specific savoring task, (c) generated and reported a memory that fit the specified criteria, and (d) answered questions about their memory; the goal was to focus on the positive aspects of the memory.

Participating mothers were randomized into one of two conditions:

***Control Condition 1: The Personal Savoring Task.*** The survey instructions prompted the participant to spend approximately ten minutes reflecting on a positive, personal emotional experience they had had recently experienced while alone (e.g., taking a walk, eating a good meal). The survey guided the participant through the exercise, encouraging them to reflect on the positive aspects of the personal experience. Mothers ( $n = 135$ ) were directed to select a memory of a positive, private emotional experience, something on which they have not had time to reflect. A series of follow-up questions prompted the participant to provide a written narrative about the positive experience and the details that surrounded the event.

***Experimental Condition 2: Relational Savoring Task.*** The survey prompted the participant to spend approximately ten minutes reflecting on an occasion in which she felt extremely connected, close, or “in sync” with her child. The survey guided the participant through the exercise encouraging them to reflect on the positive aspects associated with an experience they experienced with their child (e.g., helping the child grow, or soothing the child). The goal was to prime mothers ( $n = 147$ ) to think of a time when they felt that they had provided a secure base or safe haven for their child.

### **Dependent Variables.**

***Positive and Negative Affect.*** The Positive and Negative Affect Schedule (PANAS; Watson et al., 1988) is a commonly used self-report measure of affect that includes two scales to measure positive affect and negative affect. Mothers answered the following question “Indicate to what extent you feel this way right now, that is, at the present moment.” They rated a total of twenty positive (e.g., proud, interested) and negative (e.g., nervous, scared) emotion words on a scale of 1 to 5, with a score of 1 signifying “very slightly or not at all” and a score of 5 signifying “extremely.” The measure is associated with strong reported validity for different types of populations. In a sample of undergraduates, Cronbach’s alpha coefficients ranged from .84 to 0.90 for both scales. The two subscales are only slightly correlated and share approximately 1% to 5% of their variance (Watson et al., 1988). Cronbach’s alphas for the current samples for positive affect were .90 at pre-savoring and .91 at post-savoring; Cronbach’s alphas for pre- and post- negative affect were .91 and .93, respectively.

***Parental Feelings of Closeness.*** To assess perceived closeness to their child, mothers completed the Inclusion of Other in Self Scale (IOS; Aron et al., 1992). The IOS is a single scale item that assesses perceived overlap between self and another person using circle diagrams. Participants chose the best picture of seven images that represents their closeness to their child. Good test-retest reliability and discriminant validity were demonstrated, with minimal social desirability correlations (Aron et al., 1992). Some participants were excluded due to missing data at the post-assessment ( $n = 5$ ).

***Parenting Satisfaction.*** The Kansas Parenting Satisfaction Scale (KPS; James et al., 1985) is a 3-item instrument that was used to assess mothers’ satisfaction with (a) their child’s behavior, (b) themselves as a parent, and (c) their relationship with their child. Preliminary evidence supports satisfactory estimates of internal reliability of the scale (James et al., 1985).

Mothers endorsed items such as, “*How satisfied are you with yourself as a parent?*” on a scale from 1 (extremely dissatisfied) to 7 (extremely satisfied), with higher scores signifying more satisfaction. Cronbach’s alphas in the current study were .75 for pre-savoring and .84 for post-savoring. A few participants were excluded from analyses ( $n = 4$ ) because they did not complete the scale after completing the intervention.

**Moderator.**

***Parental Stress Index–Short Form.*** The PSI/SF is a 36-item self-report measure used to determine the different sources of stress and their associated stress levels (Abidin, 2012). Evidence suggests that the PSI has good test-re-test reliability (i.e., a range of .55 - .82 across scales), and validity and reliability of the test suggest that the measure is useful across different populations (Abidin, 2012). A few examples include, “*I feel trapped by my responsibilities as a parent,*” “*I feel alone and without friends,*” and “*I enjoy thinking about times when my child and I were getting along.*” The scale includes three subscales: a) Parental Distress, which measures parental anxiety or depression, b) Parent-Child Dysfunction Interaction, which measures the extent to which a parent feels satisfied with their interactions with their child, and c) Difficult Child, which measures how a parent perceives their child and the level of difficulty or ease the parent experiences while managing the child’s behavior. Together, these subscales yield a Total Stress score that measures the overall level of stress associated with the parenting role. The PSI/SF is commonly used to measure stress in parents who fall into high risk or clinical populations (Abidin, 2012). Cronbach’s alpha for the online sample was .92.

## **Data Preparation**

### ***Online Study Procedure***

The public nature of the Qualtrics survey led to a variety of data problems to be resolved. Many of the original 3,000 “participants” were easily identified as bots. There were also many partial and duplicate responses. Duplicate responses were identified and removed using data provided by Qualtrics, such as the location of the participants, the IP addresses, as well as children’s names as entered by the participants. A total of 282 participants were retained.

**Missing Data.** Only complete cases were included in analyses. There were missing data for several demographic variables (e.g., maternal age and child age [ $n = 14$ ], income [ $n = 15$ ], residency in the US [ $n = 29$ ], race [ $n = 32$ ], employment [ $n = 45$ ]), and for IOS post-savoring (missing  $n = 5$ , overall  $n = 277$ ), and KPS post-savoring (missing  $n = 4$ , overall  $n = 278$ ). Demographic items were included at the end of the survey and this may reflect why those variables were more impacted by missing values.

## Chapter 3. Study 2

### Research Questions and Hypotheses

The current study assessed the impacts of RS and PS in the ASD community and investigated three primary research questions:

#### Question 1.

Compared to PS, does participation in a RS intervention lead to significant positive increases in internal states of mothers of children with ASD?

*Hypothesis 1a.* Relative to mothers in the PS condition, mothers in the RS condition will report greater increases in parenting satisfaction and feelings of closeness as well as greater decreases in negative emotions from pre-savoring to post-savoring. In addition, we expect increases in positive emotions for all mothers in both conditions.

#### Question 2.

Relative to PS, does participation in the RS condition positively affect participants' attachment-related outcomes (i.e., maternal responsiveness, RF)?

*Hypothesis 2a.* Relative to PS, mothers in the RS condition will display higher levels of maternal responsiveness (from pre-savoring to follow-up).

*Hypothesis 2b.* Relative to PS, mothers in the RS condition will display higher levels of RF (from baseline [pre- and post-savoring] to follow-up).

### Methodology

#### *Participants*

Inclusion and exclusionary criteria for participants were identical to Study 1 except participants needed to live within Los Angeles or Orange County. Eligible mothers had the option to participate in Study 1 or to opt-in to Study 2 depending on whether they were available



and interested in home-visits, and they were told to choose whichever study they preferred. Mothers living in Greater Los Angeles County and Orange County were recruited from local treatment providers, parent support Facebook Groups, regional centers, ASD-related events, and other ASD-related doctors or service providers.

Study 2 recruited female custodial parents (adoptive or biological parents; ( $N = 61$ ;  $M_{age} = 38.84$  years,  $SD_{age} = 7.26$  years) and their children between the ages of 3 and 7 years old ( $M_{age} = 4.84$  years,  $SD_{age} = 1.35$  years). A total of 75% of the children were male and this number approximates the 4:1 gender ratio typically seen in the ASD community (American Psychiatric Association, 2013). At the time of the baseline assessment, most of the mothers had a partner (79.4%) and did not work outside the home (55.6%). Mothers reported household income as the following: earned below \$40,000 per year (33.7%), \$41,000 – 60,000 (23.8%), \$61,000 – 80,000 (15.2%), \$81,000 – 100,000 (8.2%), \$100,000 – 120,000 (7.1%), and greater than 120,000 (6.7%). Mothers attended High school (7.9%), Some college (17.5%), Community college (6.3%), or earned a Bachelor's degree (36.5%), Graduate degree (30.2%), or None of the above (1.6%). Mothers came from diverse racial backgrounds (White [47.6%], Latino [27%], Asian [15.9%], more than one race [3.2%], Black [1.6%], and Other [1.6%]). About half of the mothers were unemployed (25.4%) or worked part-time (23.8%), while the other half were employed full-time (19%), self-employed (6.4%), retired (1.6%), attended school (8%), or Other (9.5%). Most mothers had no additional children with ASD (69.8%), or reported one child with ASD (19%), two children with ASD (7.9%), and 1.6% had four children with ASD. Mothers reported having one other child without ASD (36.5%), two children (25.4%), three children (6.3%), or five other children (3.2%). The majority of the sample and their partner were biologically related to the target child with ASD (92.1%), followed by only the mother (3.2%), or neither the mother

or partner (3.2%) and missing (1.6%). About half of the mothers (54%) reported that their child with ASD received the gold-star assessment for ASD, the Autism Diagnostic Observation Schedule (Lord et al., 2012), whereas the other half of the mothers were unsure (36.5%) or selected “no” (9.5%).

**Attrition.** Attrition from T1 to T3 was observed in approximately 10% of our sample ( $n = 7$ ); one participant was removed due to lacking English proficiency observed during the baseline visit and the other six participants who participated in the baseline session (T1 and T2) did not complete the follow-up session (T3). In addition, four participants did not complete any of the independent savoring opportunities between T1 and T3. Dyads who began the intervention did not differ significantly from those who did not on any baseline construct assessed in the study.

### ***Procedure***

This study was approved by the Institutional Review Board at the University of California, Irvine (HS# 2017-3707). In Study 2, a longitudinal study design across five weeks was implemented. The participants completed online and in-home sessions. Mothers received \$30 at the first home visit and \$60 at the second home visit for their participation; children received a book at the first visit and a DVD at the second visit for their participation.

**Online Session 1.** Mothers completed a brief survey consisting of four questionnaires and demographic-related questions. The survey took approximately 15 minutes to complete. Mothers submitted their contact information for a follow-up to confirm eligibility and schedule their first in-home visit. Next, participants were randomly assigned (using a random number generator) to the RS or PS condition.

**In-Home Session 1.** During the first home visit, participants completed another consent form for their participation and provided permission for their child to participate as well. They were provided a copy of the consent form and were provided an opportunity to ask questions about the study. Then, they participated in four study activities and assessments:

**Free Play Interaction Task.** Mothers completed a 10-minute free play activity with their child in their home. The free-play activity was a video recorded observation that was later coded for maternal behaviors and child behaviors. Mothers were instructed to “play with their child as they normally would” and were provided with a standardized set of developmentally appropriate toys (i.e., action figures, little people, stacking blocks, pretend food, tubes, masks, a jack-in-the-box, xylophone, books, markers, wooden puzzle, small bag of colored food, animals, and transportation vehicles to sort or for play, and a View-Master™).

**Pre-intervention Assessment (T1).** Mothers completed four pre-intervention measures in a survey.

**In-person Intervention.** Mothers completed an in-person intervention with a trained intervener in which they were guided by the intervener to answer questions about recent memories. Memories either focused on personal experiences in which a participant was alone and doing something for themselves (i.e., PS) or relational experiences in which they were with their child and felt connected or felt that they were helping their child grow (i.e., RS).

**Post-intervention Assessment (T2).** After completing the intervention, mothers completed four post-measures in a survey.

**Independent Intervention Phase.** Every week for a duration of three weeks, mothers were sent a survey link to complete an online savoring task matching their savoring condition. In this way, mothers were encouraged to practice the savoring technique three times,

independently, before the follow-up session. Table 1 shows the number of participants (per condition) who completed surveys at each opportunity as well as retention over time. The online activity resembled the in-person intervention the caregivers received during the initial home visit except an audio-recorded voice spoke the instructions to the participants through the survey platform rather than an intervener. In addition, caregivers typed their answers rather than speaking answers aloud. The audio recordings incorporated a soft and calm voice which was meant to soothe mothers and facilitate them in slowing down their pace while completing the savoring activity. In sum, caregivers were provided three opportunities to practice the intervention on their own. They were also provided with contact information in case they had questions in-between home visits or they experienced any issues with the online survey platform.

**Table 1**

*Independent Savoring Activities Completed to 100% (out of n = 63 possible)*

Savoring Opportunity	Condition			Participants Retained Over Time	
	PS	RS	Total	PS	RS
Week 1	29	25	54	-	-
Week 2	26	29	55	- 3	+ 4
Week 3	23	26	49	- 3	- 3

**Follow-up Assessment (T3).** During a 1-month follow up visit, mothers completed a brief intervention satisfaction questionnaire, repeated the free play interaction task, and also completed the follow-up measures consisting of two sets of RF questions, positive and negative emotions, parenting satisfaction, and closeness to child.

## *Measures*

**Independent variables.** Study 2 included the same experimental (RS;  $n = 32$ ) and control (PS;  $n = 31$ ) conditions, but both savoring protocols included one additional question that instructed participants to focus on their future; they were asked to consider how the positive memory and “how good they felt” could positively affect their future. Moreover, this procedure differed from Study 1 because trained research assistants administered the interventions in-vivo during the first home visit. Finally, caregivers were provided three opportunities (once per week) to practice the intervention independently.

**Dependent variables.** Mothers completed the same dependent variables as in Study 1 (PANAS, IOS, KPS; see Study 1 for a full description of the variables). In the current study, Cronbach’s alphas for the positive affect scale of the PANAS were .87 at pre-savoring and .93 at post-savoring and for the negative affect scale, Cronbach’s alphas were .87 and .91, respectively. Cronbach’s alphas for the KPS were .81 at the baseline assessment (T1), .89 at the post-savoring assessment (T2), and .81 at the follow-up session (T3).

**Parental Reflective Functioning.** To assess parental reflective functioning (RF), participants completed two sets of questions from the Parent Development Interview—Revised (PDI-R Slade et al., 2004). In the current study, one set of reflection questions was the following: “*Can you tell us about a time that your child felt emotionally upset?*” with the follow-up questions, “*What was it like for you?*” and “*What was it like for your child?*” The other set of questions was identical but focused on a time that the child felt rejected. Participants completed one set of questions at the pre-savoring and another set of questions at post-savoring. The order of the question sets was counterbalanced across participants. A coding scheme which has been used in three prior investigations (Borelli, Burkhart, et al.,

2017; Borelli, Hong, et al., 2017; Borelli, Stern, et al., 2020) was used to code these data. Two raters were trained to reliability and evaluated mothers' responses to each set of questions in terms of RF criteria (e.g., developmental considerations, accurate attributions, awareness that feelings motivate behavior, opacity, awareness that people hide feelings, and knowledge that one mental state can cause different mental states) to determine three ratings: a) self-focused RF, b) child-focused RF, and c) overall RF. Scores ranged from 1 (distortion in RF) to 7 (sophisticated RF with multiple clear signs of transactional links between child mental states and behavior) for both sets of questions to which the mothers responded. Reliability was assessed on 20% of the content and the interrater correlation coefficients were between .94 - .96 for the three rating scales. Missing data was a rare occurrence for the in-home study, but one participant did not have a response for one set of the PDI questions during follow-up.

***Maternal Responsivity and Affect/Animation.*** To assess maternal responsivity and maternal affect, we used the Maternal Behavior Rating Scale-Revised (MBRS-R; Mahoney et al., 2008). The scale includes twelve items related to different parental interactive style factors including responsiveness, affect, achievement orientation, and directive (Mahoney & Perales, 2003). The scale has been used with families of children with ASD demonstrating high reliability (Mahoney & Perales, 2003). Coders scored items on a 1 to 5 scale in which higher scores represent greater demonstration of the behavior. The rating scale was used to code mother-child interactions at pre-intervention and follow-up. Four coders were trained to acceptable levels of reliability by watching and coding tapes while implementing the coding scheme. Each coder was blind to the participant condition and session timepoint (baseline or follow-up). An additional coder double coded 20% of the videos for reliability. Two subscales from the 12-items were used in this study. The maternal responsiveness/child-oriented subscale was used and included three

items: a) sensitivity, b) responsivity, and c) effectiveness. Also, the affect/animation subscale was used and included the following: a) acceptance, b) enjoyment, c) expressiveness, d) inventiveness, and e) warmth. Interrater correlation coefficients (ICC) for the Response/Child Oriented scale were .79 – .99 for each of the four coders and for the Affect/Animation scale, ICCs were .79 - .97 for each of the four coders. The sample ( $n = 60$ ) was missing two mothers who were unable to participate in follow-up visits due to the pandemic and one mother who moved between home visits and the settings from T1 to T3 were incomparable.

***Implementation Fidelity.*** A total of seven interveners, including the author, were trained to administer the intervention by two seasoned interveners. The training included an overview of the theoretical background of both interventions, two observation sessions, a minimum of four practice sessions (i.e., two sessions with non-participants and two sessions with study participants), all of which included accompanying feedback sessions. To assess the extent to which the treatment was administered as intended (i.e., fidelity), trained coders rated the interveners ability to guide the participants in the savoring activities. Fidelity coders were trained to listen to the recorded intervention sessions and rate the degree to which interveners adhered to various strategies used in savoring (e.g., rapport-building strategies, redirecting participants to the positive) and in RS (e.g., eliciting secure base or safe haven memories). Five fidelity coders were trained to 80% reliability. Four coders coded the majority of the sample for fidelity.

***Acceptability of Intervention.*** We evaluated the mothers' acceptability of the interventions, or the extent to which the parents enjoyed or felt that they or their families benefitted from RS and PS, using participant responses to 16 items assessing treatment acceptability. Anecdotal feedback was collected from participants during the follow-up session

when the opportunities arose. Independent *t*-tests were used to compare across conditions and to assess whether participants accepted RS or PS to different extents.

### ***Data Preparation***

**Data Analytic Plan.** A power analysis suggested  $N = 90$  ( $n = 45$  per group) would be necessary to evaluate the hypotheses with  $\alpha = .05$  and power = .8 and a medium effect size of .15. To account for error and attrition, a sample of  $N = 100$  was intended. Data collection was halted in 2020 due to the COVID-19 pandemic. As a result, the study sample did not reach the suggested size and two participants did not complete the final home visit in-person due to the shelter in place orders. These participants completed the survey portion of the final home visit, but the follow-up dyadic play task was not collected. Additional interested mothers were put on a waitlist, but after several months, they were told to complete the online study instead.

**Missing Data.** Only complete cases were included in analyses. Only two demographic variables had missing data including race [ $n = 3$ ] and employment status [ $n = 6$ ].



## Chapter 4. Study 1 Results

Prior to hypothesis testing, the distributions of study variables were examined and checked for normality. Skew and kurtosis values of the single-item scales did not statistically violate normality and no transformations were necessary. Outliers that were more than three standard deviations away from the mean were identified and reduced to a predetermined value (the next highest score). A series of bivariate correlations among control variables and main study variables were conducted to identify any control variables that were significantly associated with the dependent variables (see Table 2; significant associations with demographics are bolded). Based on these correlations, US residency was controlled when analyzing positive emotions, maternal age and income were controlled during analyses including negative emotions, whereas maternal age and child age were controlled when analyzing feeling of parenting satisfaction, closeness, and parenting stress.

Independent samples *t*-tests were conducted and groups with unequal variances are reported using degrees of freedom of which include decimal points. Analyses revealed that the experimental and control groups did not differ on the number of children with ASD,  $t(266) = -.72, p = .47, d = .03$ , number of children without ASD,  $t(263) = -.64, p = .52, d = .10$ , on income,  $t(267) = -.63, p = .53, d = .08$ , or on education,  $t(266) = -1.89, p = .06, d = .23$ . Despite the participants being randomly assigned to either the experimental or control condition, mothers in the PS group were older than mothers in the RS group,  $t(267) = -2.17, p = .03, d = .27$ . Groups did not differ for residence within or outside of the United States (US),  $t(262) = 1.22, p = .23, d = .13$ ; thus, participants living in countries outside the US were included in the analyses.

**Table 2***Zero-Order Correlations Across the Sample as a Whole (n = 266)*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Maternal age	---													
2. Child age	.12*	---												
3. Child gender <sup>a</sup>	-.14*	-.02	---											
4. Household income <sup>b</sup>	.41**	-.04	-.03	---										
5. Maternal education level	.35**	-.004	-.05	.52**	---									
6. Residence in US <sup>c</sup>	-.05	.08	.10	-.04	-.08	---								
7. Feelings of closeness BL	-.06	<b>-.21**</b>	-.02	-.08	.003	-.002	---							
8. Feelings of closeness FU	-.07	<b>-.20**</b>	-.01	-.07	.002	.04	.88**	---						
9. Parenting sat BL	.09	-.07	-.02	.05	.03	-.04	.16**	.11	---					
10. Parenting sat FU	.07	<b>-.12*</b>	-.01	.08	.09	-.02	.16**	.18**	.71**	---				
11. Positive emotions BL	.03	-.09	.03	.03	-.08	<b>-.17**</b>	.14*	.14*	.40**	.43**	---			
12. Positive emotions FU	-.03	-.03	.04	.10	-.04	-.10	.11	.17**	.33**	.44**	.78**	---		
13. Negative emotions BL	<b>-.14*</b>	.10	-.03	<b>-.13*</b>	-.09	.09	-.03	-.04	-.45**	-.41**	-.12*	-.13*	---	
14. Negative emotions FU	<b>-.13*</b>	.03	-.01	<b>-.16**</b>	-.07	.05	-.01	-.05	-.41**	-.39**	-.12*	-.14*	.84**	---
15. Parenting stress	<b>-.13*</b>	<b>.16*</b>	-.11	-.10	-.08	.02	-.12	-.11	-.58**	-.50**	-.35**	-.29**	.56**	.50**

<sup>a</sup> 0 = female and 1 = male.

<sup>b</sup> 1 = less than \$40,000, 2 = \$41,000 to \$60,000, 3 = \$61,000 to \$80,000, 4 = \$81,000 to \$100,000, 5 = \$100,000 to \$120,000, 6 = greater than \$120,000.

<sup>c</sup> 1 = resides in US and 2 = resides outside of US.

sat = satisfaction. Timepoints: BL = baseline, FU = follow-up.

\*  $p < .05$ . \*\*  $p < .01$ .

## Preliminary Analyses

### *Treatment Fidelity*

Using an existing coding system (Borelli, 2014), a team of trained and reliable raters blindly rated each savoring session to assess fidelity to the overall savoring instructions and to the specifics of the RS and PS conditions. Two coders trained to 80% reliability coded the entire set of responses from participants. Fidelity coding was used as a validity check on the integrity of the conditions in the study by assessing the extent to which participants followed the different savoring instructions. In terms of choosing a positive emotional memory, participants across conditions did not differ statistically,  $t(255) = -1.23, p = .22$ , and there was no difference between the groups in terms of the participants' ability to engage in savoring,  $t(273) = 1.65, p = .10$ ,  $t(280) = 1.77, p = .26$ , but, as expected, participants in the RS group were more likely to choose a relational memory compared to participants in the PS group,  $t(236) = 9.07, p < .001, d = 1.10$ . In addition, mothers in RS provided more memories with secure base and safe haven content compared to PS participants,  $t(254) = 8.67, p < .001, d = 1.84$ .

### **Hypothesis 1: Savoring Condition and Maternal Internal States**

Mixed factorial analyses of variance (ANOVAs) were conducted to measure change in pre-post means in variables assessing mothers' internal states. See Table 3 for variable means.

**Table 3**

*Means (SD) for key Variables in Study 1*

Variable	Condition					
	Control Group (PS)			Experimental Group (RS)		
	Pre-Savoring	Post-Savoring	Time Trend	Pre-Savoring	Post-Savoring	Time Trend
Pos emot	28.53(8.93) *	27.24(9.66) *	Decrease*	28.29(9.27)	28.84(10.60)	ns
Neg emot	23.20(9.62)**	20.18(9.30)**	Decrease**	22.91(9.37)**	20.20(8.81)**	Decrease**
Parent sat	4.67(1.09)	4.61(1.22)	ns	4.56 (1.01)	4.63 (1.27)	ns

Closeness	5.17(1.77)	5.12(1.85)	ns	4.85(1.78)	4.94(1.78)	ns
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Note. Pos = positive, Neg = negative, emot = emotion, sat = satisfaction.

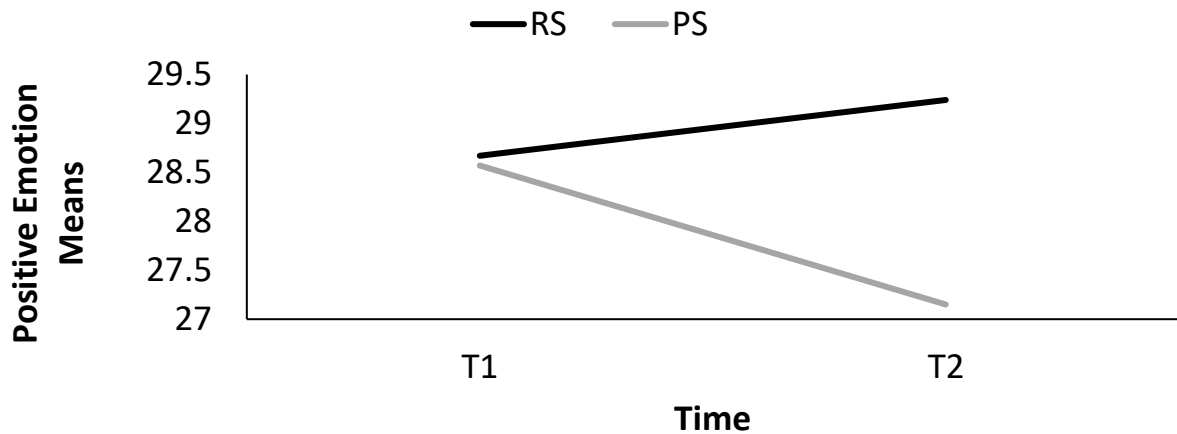
\*  $p < .05$ , \*\*  $p < .001$ .

### ***Hypothesis 1A: Positive Emotion***

In line with previous research (Borelli et al., 2015), this hypothesis predicted that participants in both the PS and RS conditions will report more positive emotion during post-savoring assessments compared to pre-savoring. Group means over time are shown in Table 3 and Figure 1. A mixed factorial ANOVA controlling for US residency ( $n = 253$ ) was conducted to assess this research question. Overall, there was no significant difference in ratings from pre-savoring to post-savoring,  $F(1,250) = 2.13$ ,  $p = .15$ ,  $\eta_p^2 = .01$ , and there was no significant difference in ratings between personal savoring group and relational savoring group,  $F(1,250) = 1.10$ ,  $p = .30$ ,  $\eta_p^2 = .004$ . In contrast, there was a significant interaction between treatment condition and time,  $F(1,250) = 6.51$ ,  $p = .01$ ,  $\eta_p^2 = .03$ . Simple effects analysis was conducted to assess differences in pre-post positive emotion for each treatment condition. Unexpectedly, participants in the personal savoring group decreased in positive emotion from pre-treatment to post-treatment,  $t(134) = 2.24$ ,  $p = .03$ ,  $d = .14$ ; however, the relational savoring group did not significantly differ from pre- to post- treatment,  $t(146) = -1.06$ ,  $p = .29$ ,  $d = .06$ .

### **Figure 1**

*Positive Emotion Means Across Savoring Conditions From pre-Savoring to Post-Savoring*

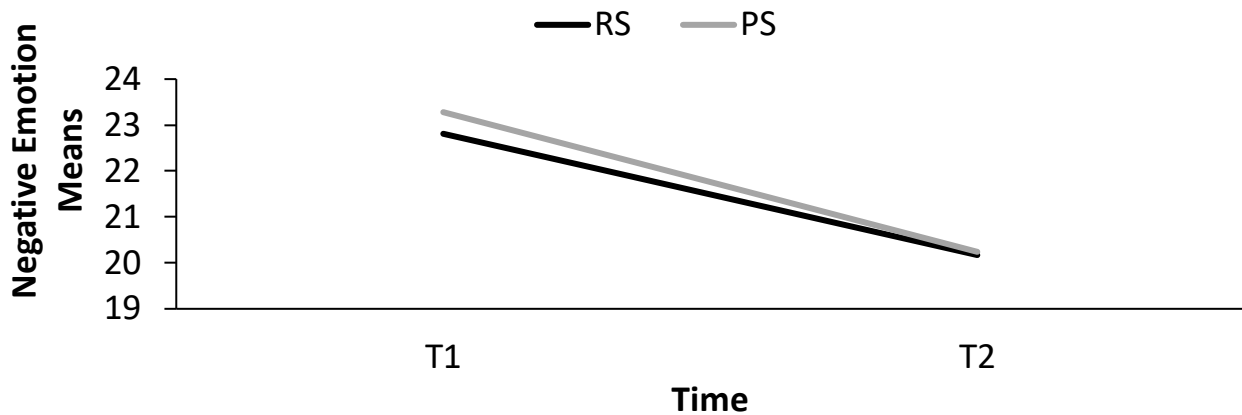


### ***Hypothesis 1A: Negative Emotions***

Based on previous research about RS (Borelli et al., 2015, Burkhart et al., 2015; Pereira et al., 2021), a stronger decrease in negative emotions for the RS group compared to the PS group was expected. A mixed factorial ANOVA controlling for maternal age and income ( $n = 267$ ) was conducted and there was no significant difference in ratings between the personal savoring group and relational savoring group, regardless of time of testing,  $F(1, 263) = .06, p = .81, \eta_p^2 < .001$  (see Table 3 and Figure 2). As predicted, RS participant negative emotions decreased from pre-savoring to post-savoring, and the same trend was observed in the PS group, indicating a main effect of time,  $F(1, 263) = 3.98, p = .05, \eta_p^2 = .02$ . There was no interaction of time and condition,  $F(1, 263) = .37, p = .54, \eta_p^2 = .001$ . Follow-up dependent  $t$ -tests were conducted to assess differences in pre-post negative emotion for each condition. Participants in the personal savoring group significantly decreased in negative emotion from pre-treatment to post-treatment,  $t(134) = 2.24, p < .001, d = .32$ . Similarly, the relational savoring group significantly decreased from pre- to post- treatment,  $t(146) = 6.60, p < .001, d = .30$ .

### **Figure 2**

*Negative Emotion Ratings Across Savoring Conditions From pre-Savoring to Post-Savoring*



### ***Hypothesis 1A: Parenting Satisfaction***

This hypothesis predicted that participants in the RS condition would experience higher levels of parenting satisfaction after the intervention compared to participants in the PS group. Another mixed factorial ANOVA controlling for maternal age and child age ( $n = 266$ ) revealed no overall difference between pre-post timepoints,  $F(1,262) = .26, p = .61, \eta_p^2 = .001$ , and no difference between the treatment conditions,  $F(1,262) = .04, p = .85, \eta_p^2 < .001$ . The interaction between savoring condition and time was also not significant,  $F(1,262) = .83, p = .36, \eta_p^2 = .003$ .

### ***Hypothesis 1A: Feelings of Closeness***

This analysis used a one-item measure to assess feelings of closeness and we hypothesized that mothers in the RS group would report feeling closer to their children post-savoring compared to mothers in the PS group. A mixed factorial ANOVA controlling for maternal age and child age ( $n = 266$ ) revealed no significant difference between pre-post timepoints,  $F(1,262) = .001, p = .97, \eta_p^2 < .001$ , as well as no significant mean difference between the treatment conditions,  $F(1,262) = 1.32, p = .25, \eta_p^2 = .005$ . Finally, the interaction between savoring condition and time was not significant,  $F(1,262) = 1.78, p = .18, \eta_p^2 = .007$ .

**Hypothesis 2A: Savoring Condition and Maternal Internal States, Moderated by Maternal Stress**

For Hypothesis 2, an interaction between savoring condition and pre-intervention stress level was expected such that mothers with higher stress levels would report greater benefits (i.e., higher positive emotions, lower negative emotions, higher parenting satisfaction, and higher feelings of closeness post-savoring). This hypothesis was evaluated using a series of hierarchical linear regressions, in which control variables, T1 values for outcome variables, condition, stress levels, and the moderation effects (condition X stress level) were tested using the PROCESS macro for SPSS (Hayes, 2012). In all analyses, maternal age and child age were used as covariates. In additional models, income and US residency were included as covariates but these did not alter the pattern of findings so they were not included in the models presented here. The total stress score variable was centered before analyses were conducted. The interaction variable of savoring condition by stress levels was not significant in any of the models (Tables 4, 5, 6, 7). This hypothesis was not supported, with all interaction-related  $p$ 's > .08.

**Table 4**

*Moderator Analysis: Savoring Type and Levels of Stress on Positive Emotions*

Variable	<i>b</i>	SE	95% CI		<i>p</i>
			<i>LL</i>	<i>UP</i>	
Condition <sup>a</sup>	-1.96	.79	-3.52	-.39	.01
Stress <sup>b</sup>	-2.64	1.83	-6.24	.97	.15
Interaction	1.61	1.17	-.69	3.90	.17
Child age	.36	.31	-.25	.97	.25
Maternal age	-.09	.07	-.23	.05	.19
Positive emot T1	.86	.05	.77	.95	<.001

Note. CI = confidence interval; *LL* = lower limit; *UP* = upper limit; emot = emotion.

<sup>a</sup> 1 = RS, 2 = PS.

<sup>b</sup> Stress = Total Score from the Parental Stress Index–Short Form.

**Table 5**

*Moderator Analysis: Savoring Type and Levels of Stress on Negative Emotions*

Variable	<i>b</i>	SE	95% CI		<i>p</i>
			<i>LL</i>	<i>UP</i>	
Condition <sup>a</sup>	-.28	.61	-1.48	.91	.64
Stress <sup>b</sup>	-1.50	1.40	-4.26	1.26	.29
Interaction	1.59	.89	-.17	3.34	.08
Child age	-.40	.24	-.86	.07	.09
Maternal age	-.02	.05	-.12	.09	.78
Negative emot T1	.76	.04	.69	.84	<.001

Note. CI = confidence interval; *LL* = lower limit; *UP* = upper limit; emot = emotion.

<sup>a</sup> 1 = RS, 2 = PS.

<sup>b</sup> Stress = Total Score from the Parental Stress Index–Short Form.

**Table 6**

*Moderator Analysis: Savoring Type and Levels of Stress on Parenting Satisfaction*

Variable	<i>b</i>	SE	95% CI		<i>p</i>
			<i>LL</i>	<i>UP</i>	
Condition <sup>a</sup>	-.10	.11	-.31	.12	.37
Stress <sup>b</sup>	.03	.25	-.46	.52	.91
Interaction	-.19	.16	-.50	.12	.23
Child age	-.05	.04	-.14	.03	.20
Maternal age	<.001	.01	-.02	.02	.97



Parenting sat T1	.73	.06	.61	.85	<.001
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Note. CI = confidence interval; *LL* = lower limit; *UP* = upper limit; sat = satisfaction.

<sup>a</sup> 1 = RS, 2 = PS.

<sup>b</sup> Stress = Total Score from the Parental Stress Index–Short Form.

**Table 7**

*Moderator Analysis: Savoring Type and Levels of Stress on Feelings of Closeness*

Variable	<i>b</i>	SE	95% CI		<i>p</i>
			<i>LL</i>	<i>UP</i>	
Condition <sup>a</sup>	-.11	.11	-.32	.11	.33
Stress <sup>b</sup>	-.28	.25	-.77	.21	.26
Interaction	.18	.16	-.14	.49	.27
Child age	-.02	.04	-.10	.07	.68
Maternal age	-.002	.01	-.02	.02	.78
Closeness T1	.88	.03	.82	.94	<.001

Note. CI = confidence interval; *LL* = lower limit; *UP* = upper limit.

<sup>a</sup> 1 = RS, 2 = PS.

<sup>b</sup> Stress = Total Score from the Parental Stress Index–Short Form.

## Chapter 5. Study 2 Results

The data were cleaned and our hypotheses were evaluated quantitatively using SPSS 26.0 (IBM Corp., 2019). Prior to hypothesis testing, study variables were checked for normality. No statistically significant violations of skew and kurtosis of the single-item scales were found and no transformations were necessary. Scores that were more than three standard deviations away from the mean were identified as outliers and were reduced to a next highest value. Bivariate correlations among control variables and main study variables were conducted and any control variables that were significantly associated with the dependent variables were controlled in subsequent analyses (see bolded values in Tables 8, 9, and 10). The experimental and control groups did not differ on the number of children with ASD,  $t(61) = -.86, p = .39, d = .22$ , without ASD,  $t(61) = .61, p = .54, d = .15$ , on income,  $t(61) = 1.65, p = .10, d = .42$ , or on education,  $t(61) = 1.33, p = .19, d = .34$ . Mixed model ANOVAs were conducted to measure change in group means in negative emotion and positive emotions from pre-savoring (T1) to post-savoring (T2). For feelings of closeness, parenting satisfaction, and RF, a third timepoint, follow-up (T3), was also analyzed using mixed model ANOVAs. Maternal age and maternal education were controlled when feeling of closeness was analyzed.

### Preliminary Analyses

**Intervention fidelity.** Independent sample  $t$ -tests did not reveal significant differences in any fidelity scales, except in scale means that supported relational savoring strategies including eliciting relational memories,  $t(31) = 31, p < .001$  and eliciting secure base or safe haven content,  $t(60) = 20.40, p < .001$ .

**Table 8**

*Zero-Order Correlations Across the Sample as a Whole (n = 63) for Demographics and Dependent Variables (continued in Table 9 and 10)*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Maternal age	---													
2. Child age	-.10	---												
3. Child gender <sup>a</sup>	.22	<b>.33**</b>	---											
4. Household income <sup>b</sup>	-.18	-.08	-.21	---										
5. Maternal education	<b>-.29*</b>	-.24	-.20	<b>.55**</b>	---									
6. Closeness T1	<b>.25*</b>	.07	.23	-.12	-.15	---								
7. Closeness T2	-.07	.20	.16	.01	-.08	<b>.62**</b>	---							
8. Closeness T3	.05	-.05	-.002	-.11	-.07	.23	-.07	---						
9. Parenting sat T1	-.06	-.04	.08	.05	.10	.12	.19	.05	---					
10. Parenting sat T2	-.01	-.02	.07	.05	-.03	.17	<b>.28*</b>	.03	<b>.73**</b>	---				
11. Parenting sat T3	.04	-.15	.03	.09	.13	.22	.22	-.08	<b>.76**</b>	<b>.60**</b>	---			
12. Positive emot BL	.01	.04	.14	-.16	-.08	.04	.06	.01	<b>.27*</b>	.24	.10	---		
13. Positive emot FU	-.02	-.03	.08	.08	.26	.05	.05	-.02	<b>.29*</b>	<b>.35**</b>	.18	<b>.71**</b>	---	
14. Negative emot BL	-.01	-.08	-.01	-.20	-.16	.03	-.003	.03	<b>-.33**</b>	<b>-.57**</b>	<b>-.32*</b>	-.09	<b>-.26*</b>	---
15. Negative emot FU	.08	-.11	.18	-.15	-.16	.12	-.05	-.02	-.22	<b>-.43**</b>	-.17	.16	-.03	<b>.71**</b>

<sup>a</sup> 0 = female and 1 = male.

<sup>b</sup> 1 = less than \$40,000, 2 = \$41,000 to \$60,000, 3 = \$61,000 to \$80,000, 4 = \$81,000 to \$100,000, 5 = \$100,000 to \$120,000, 6 = greater than \$120,000.

sat = satisfaction; emot = emotion. Timepoints: T1 = pre-savoring, T2 = post-savoring, T3 = follow-up.

\*  $p < .05$ . \*\*  $p < .01$ .

**Table 9***Zero-Order Correlations Across the Sample as a Whole (n= 63) for Demographics and Reflective Functioning (RF) variables**(Continued in Table 10).*

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Maternal age	---												
2. Child age	-.10	---											
3. Child gender <sup>a</sup>	.22	<b>.33**</b>	---										
4. Household income <sup>b</sup>	-.18	-.08	-.21	---									
5. Maternal education	<b>-.29*</b>	-.18	-.08	<b>.55**</b>	---								
6. Self-focused RF T1	-.24	-.01	.05	.25	.14	---							
7. Child-focused RF T1	-.03	.16	-.03	.04	.10	.28*	---						
8. Overall RF T1	-.12	.14	.01	.19	.17	<b>.61**</b>	<b>.81**</b>	---					
9. Self-focused RF T2	-.08	.12	-.13	.01	-.03	.25*	.14	.32*	---				
10. Child-focused RF T2	-.02	.06	-.07	.15	.03	.10	.18	.26*	.46**	---			
11. Overall RF T2	-.04	.13	-.004	.11	-.01	.23	.18	.35**	.75**	.82**	---		
12. Self-focused RF Mean T3	-.03	.11	.07	.24	-.03	.37**	.24	.39**	.26*	.09	.17	---	
13. Child-focused RF Mean T3	-.14	.14	-.02	.16	.17	.30*	.34**	.42**	.21	.14	.17	.59**	---
14. Overall RF Mean T3	-.12	.14	-.02	.16	.19	.32*	.34**	.44**	.30*	.13	.20	.80**	.89**

<sup>a</sup> 0 = female and 1 = male.<sup>b</sup> 1 = less than \$40,000, 2 = \$41,000 to \$60,000, 3 = \$61,000 to \$80,000, 4 = \$81,000 to \$100,000, 5 = \$100,000 to \$120,000, 6 = greater than \$120,000.

RF = reflective functioning. Timepoints: T1 = pre-savoring, T2 = post-savoring, T3 = follow-up.

\*  $p < .05$ . \*\*  $p < .01$ .

**Table 10***Zero-Order Correlations Across the Sample (n = 61) for Maternal Responsiveness and Affect (continued)*

	1	2	3	4	5	6	7	8	9
1. Maternal age	---								
2. Child age <sup>a</sup>	-.10	---							
3. Child gender	.22	.33**	---						
4. Household income <sup>b</sup>	-.18	-.08	-.21	---					
5. Maternal education	-.27*	-.18	-.08	.48**	---				
6. Maternal responsiveness T1 <sup>c</sup>	.09	-.02	-.01	-.27*	.14	---			
7. Maternal responsiveness T3 <sup>d</sup>	-.28*	-.21	-.21	.39**	.35**	.56**	--		
8. Affect and animation T1 <sup>c</sup>	-.08	-.26*	-.007	.30*	.23	.71**	.53**	---	
9. Affect and animation T3 <sup>d</sup>	-.22	-.08	-.18	.30*	.25	.36**	.75**	.55**	---

<sup>a</sup> 0 = female and 1 = male.<sup>b</sup> 1 = less than \$40,000, 2 = \$41,000 to \$60,000, 3 = \$61,000 to \$80,000, 4 = \$81,000 to \$100,000, 5 = \$100,000 to \$120,000, 6 = greater than \$120,000.<sup>c</sup> T1 = pre-savoring; <sup>d</sup> T3 = follow-up.\*  $p < .05$ . \*\*  $p < .01$ .

## Hypothesis 1: Savoring Condition and Change in Maternal Internal States

Mixed factorial ANOVAs were conducted to assess changes by group in positive emotions, negative emotions, feelings of closeness, and parenting satisfaction. Variable means by condition at each timepoint are listed in Table 11.

**Table 11**

*Mean Values of Feelings of Closeness (IOS), Emotion (Positive and Negative), and Parenting Satisfaction (KPS) by Condition, and Changes Over Time*

Variable / Timepoint	Time Trends	Condition		
		Total M (SD)	Personal M (SD)	Relational M (SD)
Sum pos emot T1	--	31.95 (7.68)	32.23 (7.69)	31.69 (7.79)
Sum pos emot T2	Increase from T1*	33.67 (8.48)*	33.87 (9.33)*	33.47 (7.70)*
Sum neg emot T1	--	17.19 (6.51)	16.16 (5.77)	18.19 (7.10)
Sum neg emot T2	Decrease from T1**	13.48 (5.34)**	12.23 (3.53)**	14.69 (6.48)**
Parenting sat T1	PS higher**	4.84 (1.12)	5.23 (1.16)**	4.45 (.97)
Parenting sat T2	PS higher**	5.14 (1.14)	5.40 (1.07)**	4.90 (1.17)
Parenting sat T3	PS higher**	4.85 (1.07)	5.05 (.93)**	4.65 (1.15)
Closeness T1	--	5.16 (1.69)	5.45 (1.57)	4.88 (1.77)
Closeness T2	ns	5.24 (1.70)	5.45 (1.61)	5.03 (1.79)
Closeness T3	ns	4.25 (1.56)	4.42 (1.63)	4.09 (1.49)

*Note.* Pos = positive, Neg = negative, Emot = emotion, Sat = satisfaction; T1 = pre-savoring, T2 = post-savoring, T3 = 4-week follow-up; ns = not significant. Time Trends describe the main effects of time.

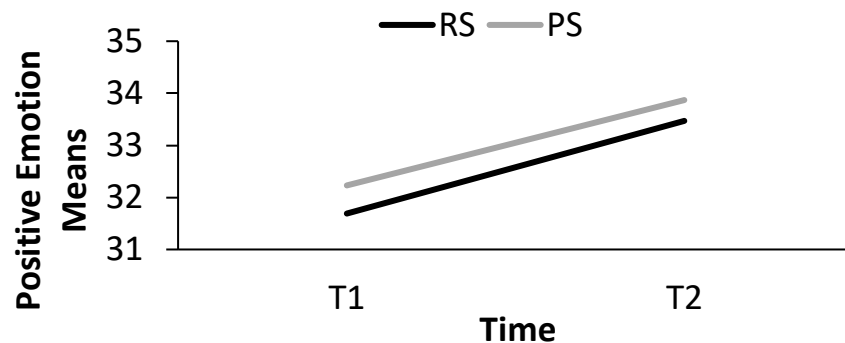
\*  $p < .05$ . \*\*  $p < .01$ .

### ***Hypothesis 1A: Positive Emotions***

This hypothesis predicted that mothers in both the PS and RS groups will report more positive emotion during post-savoring assessments compared to pre-savoring and this hypothesis was supported. Participants' ratings of positive emotions are shown in Table 6 and Figure 3. A 2 x 2 mixed factorial ANOVA (time x condition) was conducted and the differences between pre-savoring and post-savoring means were significantly different,  $F(1,61) = 4.68, p = .03, \eta_p^2 = .07$ , indicating that both groups experienced statistically significant increases in positive emotions after engaging in the savoring activities, as hypothesized. Mean difference between conditions was not significant,  $F(1,61) = .06, p = .81, \eta_p^2 = .001$ . Finally, the interaction of time and condition was not significant,  $F(1,61) = .01, p = .93, \eta_p^2 < .001$ .

**Figure 3**

*Positive Emotions Across Savoring Conditions From Pre to Post-savoring (Study 2)*



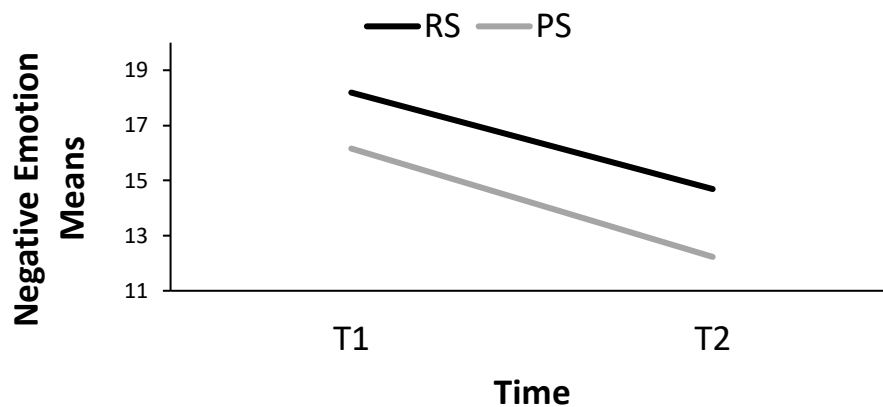
### ***Hypothesis 1A: Negative Emotions***

Based on prior research about the effects of RS (Borelli et al., 2015, Burkhart et al., 2015), we expected a stronger decrease in negative emotions for the RS group compared to the PS group. See Figure 4 for mothers' ratings of negative emotions at each timepoint. A 2 x 2

mixed factorial ANOVA (time X condition) was conducted to assess this research question. The difference between pre-savoring (T1) and post-savoring (T2) means was significant,  $F(1,61) = 43.99, p < .01, \eta_p^2 = .42$ , indicating that both groups had lower negative emotions after completing the savoring activities. Mean differences between conditions did not reach significance,  $F(1,61) = 2.52, p = .12, \eta_p^2 = .04$ . Finally, the interaction of time and condition was not significant,  $F(1,61) = .01, p = .92, \eta_p^2 < .001$ .

**Figure 4**

*Negative Emotions Across Savoring Conditions From Pre to Post-savoring (Study 2)*



***Hypothesis 1A: Parenting Satisfaction***

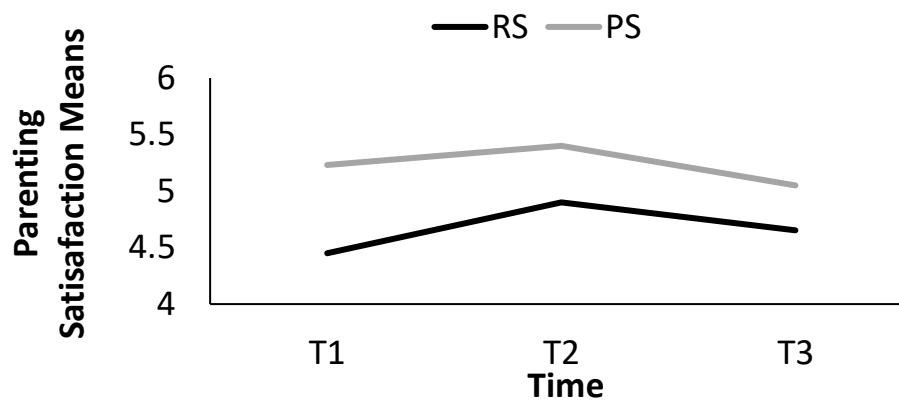
Mothers rated parenting satisfaction at all three time-points. Based on previous research, parents who participated in RS maintained increases in parenting satisfaction when tested two-year later (Burkhart et al., 2015). A 2 x 3 mixed factorial ANOVA (group x time) was conducted to assess this hypothesis, which predicted differences between savoring conditions across time, specifically, that mothers in the RS group would report greater increases in parenting satisfaction over time compared to mothers in the PS group. Mauchly's Test of Sphericity indicated that the



assumption of sphericity had been violated,  $\chi^2(2) = 9.45$ ,  $p = .01$ , and therefore, a Greenhouse-Geisser correction was used for the interaction of time and savoring condition. The differences between pre-savoring (T1) and post-savoring (T2, T3) did not differ at a statistically significant level,  $F(1,61) = .02$ ,  $p = .89$ ,  $\eta_p^2 < .001$ , whereas the mean difference between conditions across time was significant,  $F(1,61) = 5.55$ ,  $p = .02$ ,  $\eta_p^2 = .08$ , showing that participants in the PS group had higher levels of parenting satisfaction compared to participants in the RS group regardless of time of measurement (see Figure 5). The interaction was not significant,  $F(2,106) = 1.52$ ,  $p = .23$ ,  $\eta_p^2 = .02$ .

**Figure 5**

*Parenting Satisfaction at Pre-savoring, Post-savoring, and Follow-up (Study 2)*



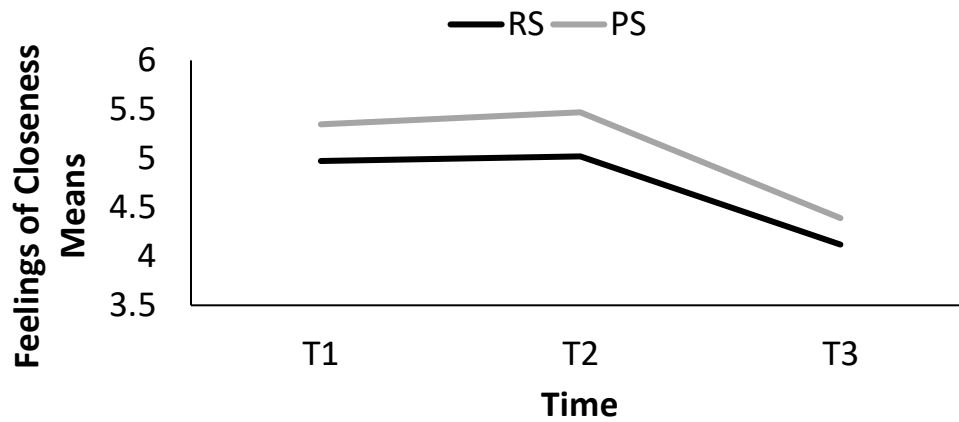
***Hypothesis 1A: Feelings of Closeness***

This hypothesis used a one-item measure to assess feelings of closeness and it was hypothesized that mothers in the RS group would report feeling closer to their children post-savoring compared to mothers in the PS group. Mothers' ratings of feelings of closeness across three time points are shown in Figure 6. A 3 x 2 mixed factorial ANOVA (time x condition) was

conducted, and Mauchly's Test of Sphericity indicated that the assumption of sphericity had been violated,  $\chi^2(2) = 22.25, p < .001$ , and therefore, a Greenhouse-Geisser correction was used for the interaction of time and savoring condition. The hypothesis that overall PS and RS condition means would differ was not supported,  $F(1,59) = 1.55, p = .22, \eta_p^2 = .03$ , nor were the differences between pre-savoring (T1), post-savoring (T2), and follow-up means (T3) significantly significant,  $F(1,59) = .50, p = .48, \eta_p^2 = .01$ . Finally, the interaction of time and savoring condition was not significant,  $F(2, 89) = .05, p = .92, \eta_p^2 = .001$ .

**Figure 6**

*Feelings of Closeness Across Savoring Conditions at Pre-savoring, Post-savoring, and Follow-up (Study 2)*



### **Savoring Condition and Attachment-Related Constructs**

Mixed factorial ANOVAs were conducted to assess changes in reflective function, maternal responsiveness, and maternal affect.

*Hypothesis 2a: Savoring Condition, Maternal Responsiveness, and Affect*

To assess differences in savoring condition and maternal responsiveness, videos of mother-child free-play interactions were coded ( $n = 61$ ). The Maternal Behavior Rating Scale was used to assess the impact of RS ( $n = 32$ ) and PS ( $n = 28$ ) on parent-child interaction quality. Another series of bivariate correlations among control variables and main study variables was conducted to identify any control variables that were significantly associated with the dependent variables (see Table 8). Based on these correlations, maternal age and income were controlled during analyses including maternal responsiveness, whereas child age and income were controlled when analyzing affect/animation. Repeated measures ANOVAs were conducted to assess for differences between savoring condition from T1 to T3 in the Responsive/Child Oriented scale and the Affect/Animation scale. Study means are listed in Table 12.

**Table 12**

*MBRS Scale Means (SD) Across Conditions*

	Responsivity/Child-Oriented		Affect/Animation		
	Condition		Condition		
	RS	PS	RS	PS	
T1	3.32(.87)	3.25(.77)	2.81(.55)	2.79(.47)	<i>ns</i>
T3	3.63(.89)**	3.31(.79)**	2.87(.58)	2.78(.57)	<i>ns</i>

*Note.* Timepoints: T1 = pre-savoring, T3 = follow-up; *ns* = not significant.

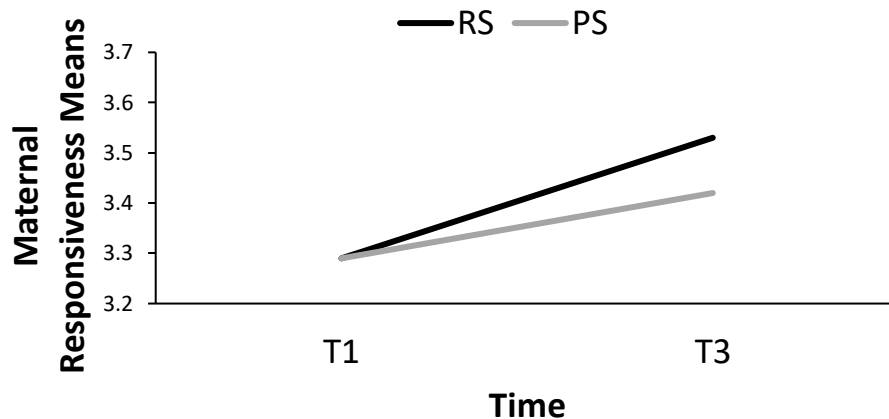
\*\* $p = .01$ .

**Responsiveness.** The Maternal Behavior Rating Scale was used to assess the impact of the intervention conditions on parent-child interaction quality. Mixed model repeated measures

ANOVAS (condition x time) controlling for maternal age, maternal education, and income were conducted to assess differences between savoring conditions from T1 to T3 in the Responsive/Child Oriented scale. Group means are listed in Table 8 and Figure 7. Mean differences between conditions were not significant,  $F(1,55) = .09, p = .76, \eta_p^2 = .002$ . The difference between pre-savoring (T1) and follow-up (T3) means were significant,  $F(1,55) = 5.26, p = .03, \eta_p^2 = .09$ , indicating that both groups increased in responsiveness at T3. Similarly, the interaction of time and condition also was not significant,  $F(1,55) = .27, p = .60, \eta_p^2 = .01$ .

**Figure 7**

*Maternal Responsiveness at Pre-Savoring, Post-Savoring, and Follow-up (Study 2)*



*Affect.* A mixed factorial ANOVA controlling for child age and income was conducted to assess changes in group means over time. Mean differences between conditions were not significant,  $F(1,56) = .01, p = .94, \eta_p^2 < .001$ . The effect of time assessing for differences between pre-savoring (T1) and follow-up (T3) means were not significant,  $F(1,56) = .95, p = .33, \eta_p^2 = .02$ . The interaction of time and condition was not significant,  $F(1,56) = .20, p = .65, \eta_p^2 = .004$ .

### ***Hypothesis 2b: Reflective Functioning***

Reflective functioning was measured through typed responses to question sets that included three questions in total (see mean scores in Table 13). Participants completed a minimum of one set of questions at each timepoint and a maximum of both sets at one timepoint. Specifically, at T1, participants were randomly assigned to receive a question set addressing a time when their child was upset or felt rejected. The question sets were counterbalanced and at post-savoring, T2, mothers received the other question set. At T3, mothers received both question sets, about their child feeling upset and rejected. To measure change across all of the timepoints, a mean score of both question sets was created for T3. Three mixed (2 x 3) factorial ANOVAs (condition x time) were conducted on the three types of RF (self-focused, child-focused, and overall).

**Table 13**

#### *Reflective Functioning (RF) Constructs Across Conditions and Timepoints*

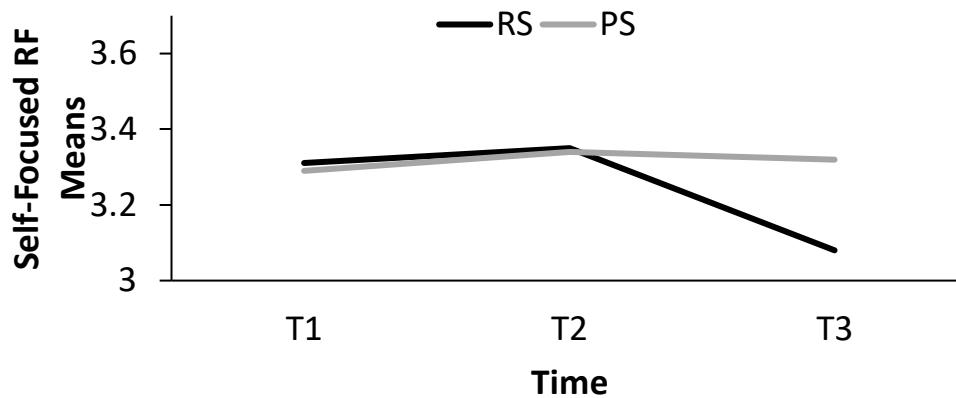
RF Construct	T1		T2		T3	
	Condition		Condition		Condition	
	PS	RS	PS	RS	PS	RS
Self-focused	3.29(.86)	3.31(.10)	3.34(1.15)	3.35(.10)	3.32(.61)	3.08(.83)
Child-focused	3.29(1.04)	3.34(1.45)	3.42(.96)	3.44(1.16)	3.27(.77)	3.16(.93)
Overall	3.23(.85)	3.38(1.24)	3.39(.88)	3.50(1.02)	3.14(.78)	3.05(.97)

*Note.* Timepoints: T1 = pre-savoring, T2 = post-savoring, T3 = follow-up; RF = reflective functioning.

**Self-Focused RF.** A 2 x 3 mixed factorial ANOVA (condition x time) was conducted to assess this research question. The differences between pre-savoring (T1) and follow-up means (T2, T3) on self-focused RF were not significant,  $F(1,61) = .72$ ,  $p = .40$ ,  $\eta_p^2 = .01$  (Figure 8). The differences between the RS and PS conditions were not significant,  $F(1,61) = .23$ ,  $p = .64$ ,  $\eta_p^2 = .004$ . Moreover, the interaction of time and condition was not significant,  $F(2, 122) = .58$ ,  $p = .56$ ,  $\eta_p^2 = .009$ .

**Figure 8**

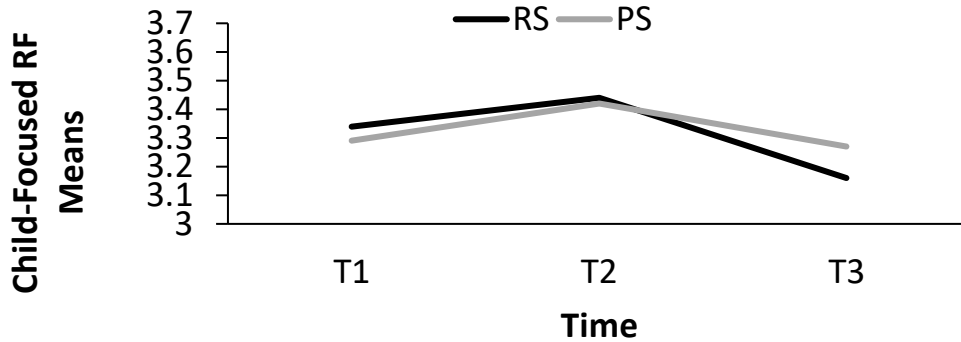
*Self-Focused RF Across Conditions at Pre-savoring, Post-savoring, and Follow-up (Study 2)*



**Child-focused RF.** The difference between PS and RS condition means on child-focused RF was not significant,  $F(1,61) = .007$ ,  $p = .93$ ,  $\eta_p^2 < .001$ . The main effect of time, that is, the differences between pre-savoring (T1) and follow-up means (T2, T3) did not reach significance,  $F(1,61) = .41$ ,  $p = .52$ ,  $\eta_p^2 = .007$  (Figure 9). In addition, the interaction of time and condition was not significant,  $F(2, 122) = .14$ ,  $p = .87$ ,  $\eta_p^2 = .002$ .

**Figure 9**

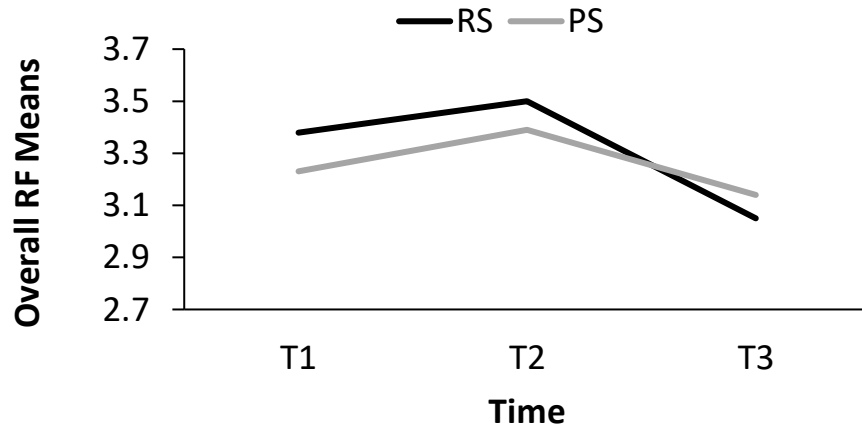
*Child-Focused RF Across Conditions at Pre-Savoring, Post-savoring, and Follow-Up (Study 2)*



**Overall RF.** Results of overall RF are displayed in Figure 10. The means in the PS and RS conditions were not significantly different,  $F(1,61) = .09, p = .77, \eta_p^2 = .001$ . The differences between pre-savoring (T1) and follow-up means (T2, T3) were also not significant,  $F(1,61) = 2.46, p = .12, \eta_p^2 = .04$ . The interaction of time and condition was not significant,  $F(2, 122) = .45, p = .64, \eta_p^2 = .007$ .

**Figure 10**

*Overall RF Across Conditions at Pre-Savoring, Post-Savoring, and Follow-up (Study 2)*



## Treatment Acceptability

Mothers rated all 16 items on a scale from 1 (Strongly Disagree) to 7(Strongly Agree).

No differences were observed between savoring condition on any items except one: “*I understand how to use these techniques on my own.*” Unexpectedly, mothers in the RS group ( $M = 5.81, SD = 1.00$ ) rated understanding how to use the savoring techniques lower than mothers in the PS group ( $M = 6.39, SD = .72$ ),  $t(61) = -2.62, p = .01, d = .67$ . Overall, the means from mothers in both groups rated the intervention as neutral (4) or higher for all items (Table 14).

**Table 14**

*Treatment Acceptability Items and Means (SD)*

Items	PS ( $n = 31$ )	RS ( $n = 32$ )
<i>Instructions: “Please rate the extent to which you disagree or agree with the following statements.”</i>		
1. I enjoyed the reflective activity at home.	6.13 (1.20)	6.09 (0.93)
2. I regularly used the activity on my own.	4.84 (1.86)	4.38 (1.56)
3. The activity improved interactions between my child and me.	5.03 (1.17)	5.28 (1.17)
4. I understand how to use these techniques on my own.	<b>6.39 (0.72)**</b>	5.81 (0.10)
5. This is an acceptable activity for me to do that helps me feel connected with my child.	5.90 (1.01)	6.16 (.88)
6. I would suggest the use of this activity to other parents.	6.06 (1.09)	6.06 (1.13)
7. This activity helped me understand how my child may be feeling in different situations better than before I learned the activity	4.74 (1.65)	5.00 (1.52)
8. I feel better equipped to understand and support my child after practicing this activity.	5.06 (1.53)	5.03 (1.38)
9. The research assistants were knowledgeable.	6.65 (.84)	6.22 (1.04)
10. The activity quickly improved my mood.	6.35 (.88)	6.19 (.90)
11. The activity will produce long term effects on my relationship with my child.	5.58 (1.18)	5.75 (1.41)
12. I feel my social interactions with my child improved after this activity.	5.71 (1.01)	5.88 (.87)
13. The goals of this activity are important to my well-being.	6.19 (.95)	6.13 (.98)
14. This activity benefitted me.	6.16 (1.00)	6.31 (.97)
15. This activity benefitted my child.	5.90 (1.11)	5.97 (1.06)
16. This activity benefitted my family.	5.87 (1.06)	6.00 (1.08)

\*\*  $p = .01$



## **Chapter 6. General Discussion**

Extensive research has clearly demonstrated that mothers of children with ASD struggle emotionally and psychologically during many stages of their ASD journey. Due to the rise in prevalence of ASD, understanding optimal ways to support these parents is a public health concern. The majority of parent education programs primarily target psychoeducation about ASD and parent-mediated interventions, but few interventions have been developed to support parents in managing the negative emotions that often inundate them while they attempt to obtain diagnoses, services, and support for their children. Theoretically, support that lacks a personal care component aimed at bolstering psychological resources is flawed because parents who are struggling to manage and regulate negative emotions while dealing with maladaptive behaviors presented by their children could be less effective at meeting both their personal and familial needs. To address this gap in the research literature, this study aimed to compare two techniques from the field of positive psychology, relational savoring (RS) to personal savoring (PS), to assess whether parents of children with ASD would benefit from savoring, and particularly RS, in terms of decreasing an internal psychological risk factor (i.e., negative emotions) and increasing internal psychological resources (e.g., maternal responsiveness, parenting satisfaction). Overall, the two studies yielded limited significant results and different results were obtained when the interventions were administered online (Study 1) versus in-person (Study 2).

### **Study 1 (Online Study)**

The goal of Study 1 (online study) was to assess the impacts of a one-time exposure to RS and PS on maternal internal states in parents of children with ASD.

### **The Impact of RS on Maternal Internal States**

#### ***Positive Emotions***

First, RS participants experienced increases in positive emotions in response to the savoring as we intended, but this increase did not reach significance, whereas the online PS group unexpectedly decreased in positive emotion and this decrease reached significance. These findings are inconsistent with previous research (Burkhart et al., 2015; Pereira et al., 2021) and findings in Study 2 (discussed later) in which RS and PS were associated with increased positive emotions. To understand the decrease in positive emotions in mothers in the online PS group, an informal post-hoc analysis was performed on the content of online PS responses. Several mothers in the PS group appeared to struggle with focusing on positive emotions during PS and instead expressed negative emotions (Table 15). Two themes were identified that seemed to pervade PS mothers' responses with negative emotion content: 1) focusing on her child's well-being rather than her personal well-being and 2) struggling between needing a break and feeling guilty for wanting or taking time alone.

**Table 15**

*Examples of Participants Struggling to Complete PS (Negative Emotion Portions are Italicized)*

Theme	Example of Savoring
<i>Focusing on her child's well-being rather than her personal well-being</i>	<p><b>Description of Event:</b> <i>"I honestly can't remember the last time I did something on my own that made me happy. The only thing I could think of was last week I took the dog for a walk, but I wasn't really happy about it, but it was nice to be alone with the dog and not think so much."</i></p> <p><b>Feelings During the Event:</b> <i>"Nothing. The blankness now that I look back on it is what was nice. I was just trying to put one foot in front of the other."</i></p> <p><b>Thoughts Then:</b> <i>"Just trying to make it through the neighborhood. I remember thinking I am completely out of shape and need to do this more often, but don't have the time to."</i></p> <p><b>Thoughts Now:</b> <i>"I'm thinking it's kinda sad that I don't have time to do more things for myself, but that my daughter is what matters most. She's young and I need to give her the best start in life so that she can have the most opportunities. I can focus on me later."</i></p>

<p>Struggle between needing a break and feeling guilty for wanting or taking time alone</p>	<p><b>Description of Event:</b> “I made a 30-minute drive to a neighboring town to pick up glasses for my daughter. I was alone with no yelling or anxiety to keep my child from becoming unhappy. I had my radio as loud as I wanted with the bass up. My daughter has very sensitive ears and the music would have upset her. I felt free.”</p> <p><b>Feelings During Event:</b> “I felt excited that my environment was to my liking. Being a stay at home and special needs parent you tend to forget who you are or what you enjoy doing. One day a doctor asked me what I did for fun and I was shocked when I realized I had no clue.”</p> <p><b>Thoughts Then:</b> “I felt calm and at peace. My anxiety is at about an 8 when we are out. I have to make sure we have a backpack with everything we need to keep CHILD calm. I was excited to have a moment to myself and I felt free from my life for just a moment.”</p> <p><b>Thoughts Now:</b> <i>“I feel guilt for wanting to do things that make me happy and that I enjoy time away from my kids so much. I wish I could be a priority in my own life. I miss the person I was before CHILD's diagnosis.”</i></p>
<p>Struggle between needing a break and feeling guilty for wanting or taking time alone</p>	<p><b>Description of Event:</b> <i>“I very rarely feel relaxed. The last time I had time to myself and was relaxed was about a month ago. My children's dad took them on an overnight trip. It was my first time away from them overnight. I spent the day and evening organizing and listening to podcasts I liked. I fell asleep so easily and slept very well. I also enjoyed one on one time with our kitten. The next day I was able to wake up and shower and have my coffee in peace. It was wonderful.”</i></p> <p><b>Feelings During Event:</b> “So calm and relaxed. Definitely felt excitement that I would get so long to myself and nervous how the boys would do without me there at bedtime (they did very well).”</p> <p><b>Thoughts Then:</b> <i>“I felt like I was being a bad mother by not going on this trip as a family. I felt worried I would be judged but a friend of mine pushed me to get some me time and not worry about what anyone else felt or thought.”</i></p> <p><b>Thoughts Now:</b> <i>“Wishing I could have another break. It never happens and my life as a mother is exhausting every day. I wake up counting down until bedtime which feels like a terrible way to feel about being with my babies.”</i></p>

*Note.* Questions irrelevant to emotional content were removed. The only changes to the verbatim responses included corrected spelling errors.

One identified theme showed several mothers believed that their children’s needs took precedence over their personal needs and they lacked time to engage in personal activities. For this population, thinking of a personal experience may have felt foreign because many parents of children with ASD rarely have opportunities to take time for themselves. Several mothers said

that they had not engaged in a personal experience in a long time and while the instructions asked the participants to focus on a recent memory, several mothers reported instances that occurred many months or years prior. For example, one mother reported, *“I’m never by myself as I am the sole caretaker of two special needs children. Good memories for me are ones that involve taking my kids to places and watching them explore and learn.”* In this case, the participant lacked time for herself and also shared that PS task was misaligned with her beliefs and the way she led her life. Further, some mothers reported, “I can focus on myself later” (Table 15), a type of statement that brings into question what types of messages parents may be receiving from the different ecologies in which they are embedded and whether self-care is promoted for parents of autistic children. For example, if parent education and training programs lack a focus on engaging in self-care and prioritizing personal well-being because they are highly focused on teaching skills and psychoeducation, then it may not be surprising that parents focus all of their energy and time on their children’s needs rather than their own. But, this primary or sole focus on children’s needs and building up the parents to learn more about ASD and implement parent-mediated interventions may simultaneously (and unintentionally) lead parents to put aside the critical goal of maintaining their psychological well-being. In an ecology like this, focusing on the self would feel foreign indeed. On one hand, this maternal dedication to their children is admirable and shows their immense care about their children’s well-being, and on the other hand, this choice could be detrimental if these mothers are highly stressed and experiencing high rates of anxiety-related and depressive symptoms.

The second theme illustrated mothers’ struggle between needing a break and taking a break and also feeling guilty for wanting or taking time alone (Table 15). Mothers reported a desire for time without their children, but stated the impracticality of that need and many

reported feeling guilt when they engaged in personal activities without their children. Some mothers (from both studies) expressed that they enjoyed taking time to think about personal experiences and wanted to do so more often. Perhaps when some mothers experience guilt when taking time for themselves, they may unintentionally learn to stop engaging in self-care behaviors and instead focus solely on dedicating their time and efforts to their child's well-being. The study asked mothers to highlight personal experiences and perhaps, for mothers, the act of drawing attention through PS to their feelings of wanting more time alone as well as their feelings of guilt may have led them to feel less positively after the savoring exercise. Overall, for PS mothers, focusing on themselves, while hard, may provide space for something that is deeply desired, yet difficult to attain. Nevertheless, the mean level of positive emotion for mothers in the PS group declined from before to after the savoring exercise.

### ***Negative Emotions***

Second, both treatment groups exhibited significant decreases in negative emotions. This finding is consistent with previous research (Pereira et al., 2021), however, the hypothesis that the RS group would decrease more than the PS group was not supported. Both RS and PS were meant to decrease negative feelings, but it was hypothesized that RS would create a stronger impact because mothers were predicted to benefit more after focusing on their relationship strengths and focusing on a positive experience in which they helped their children grow or felt very connected to them. However, it appears that PS was an equally strong and effective intervention for this population and created a comparable impact to RS.

### ***Relational Outcomes***

Relational outcomes included the measures of parenting satisfaction and feelings of closeness. Previous research has focused on marital satisfaction or satisfaction with services.

There were no group differences or interactions (group x time) on parenting satisfaction and feelings of closeness from pre-savoring to follow-up. These null results suggest that a one-time online savoring intervention may not have been strong enough to create change in parenting satisfaction and feelings of closeness. This finding replicated the initial findings in the Burkhart et al. study in which there was no difference between savoring groups. Unlike the Burkhart et al. study, this study did not investigate whether attachment avoidance moderated the relationship between savoring condition and relationship satisfaction.

For feelings of closeness, the mean score was toward the middle of the scale and did not suggest enmeshed, or overly close relationships between the mothers and children as some researchers have cautioned about (Gau et al., 2011). One potential explanation for the null finding is that mothers may have felt perfectly close to their children and did not desire or feel more closeness because they felt content with their relationship closeness. Or, perhaps relationship status variables are more difficult to change than emotional states. In this case, a sustained intervention would be needed to make a shift in these outcomes.

### ***Moderation by Stress***

The hypothesis that maternal stress levels would interact with the savoring type to predict changes in emotions and relationship variables was not supported. We expected that mothers with higher stress would benefit from more RS and this was not supported. The only main effect indicated that the PS condition was associated with lower positive emotion post-savoring, adjusting for positive emotions at pre-savoring, regardless of stress. These null findings do not align with recent research that indicate parental emotion regulation predicted total parental stress scores on the Parent Stress Index in mothers of children with ASD (Di Renzo et al., 2021). One potential explanation is that the effects were too small effects to be detected or perhaps more

moderating variables such as child ASD symptomology or savoring beliefs were needed in the model.

## **Study 2 (In-Person Study)**

The goal of Study 2 (in-person administration) was to build on Study 1 and show that an in-person administration of savoring, followed by multiple opportunities to independently savor, would shift emotions, as well as relationship outcomes and increase the quality of mother-child interactions.

### **The Impact of RS on Maternal Internal States**

#### ***Positive Emotions***

Mothers from RS and PS groups exhibited significant increases in positive emotions immediately after savoring. These findings align with previous findings from an RS study with mothers of young neurotypical children (Burkhart et al., 2015) and also from a recent study investigating PS and RS as interventions for anxious mothers of autistic children in Singapore (Pereira et al., 2021) and from the broader savoring research (Bryant & Veroff, 2007). As predicted, the in-person savoring interventions both contributed to increases in self-reported positive emotions from before to after the savoring exercise. For this outcome, in-person savoring worked better than online administration.

To understand the discrepant findings between Study 2 and Study 1 (neither RS nor PS participants significantly increased in positive emotions), the quality of the savoring in online versus in-person settings was examined. Specifically, how well a person engaged in either savoring activity would theoretically affect their overall gains from participating in either study. This post-hoc hypothesis regarding savoring quality was assessed by measuring participant savoring ability. All savoring responses were blinded and the savoring instructions were

removed. For Study 2 responses, all intervener language as well as brief conversational moments between an intervener and the participants were removed to make the responses equal across the studies. A trained and reliable coder rated savoring ability on a scale of 1 (very low ability) to 5 (very high ability). An independent samples *t*-test showed that mothers in the online study ( $M = 2.90$ ,  $SD = 1.09$ ) exhibited lower savoring quality compared to mothers in the in-person study ( $M = 3.21$ ,  $SD = 1.15$ ),  $t(342) = 1.98$ ,  $p = .048$ ,  $d = .28$ . Different factors could have affected the quality of the experience for the participants in each study. First, the in-person participants received guidance in the savoring activity with a trained intervener, whose job was to guide the mothers through the baseline mindfulness activity and the memory selection process, support the participant in staying focused on the positive aspects of the memory, and answer any questions or concerns the participants may have had. Second, in-home participants had the benefit of having another research assistant watching their child(ren) while mothers engaged in the savoring activity. Online participants did not have any of these supports. Third, online participants could have completed the study in any environment, whereas all in-home participants completed the study in their home (or a family member's home), creating a consistent environment across all in-person participants in Study 2. Taken together, online participants lacked guidance from an intervener and were unable to get their questions answered if applicable, childcare to help them focus on the online study, and a controlled environment, any of these variables could negatively affect their ability to engage in the survey and could create a barrier for them to yield the maximum benefits from both savoring interventions. Engagement in savoring may explain why we did not see the expected increase in positive emotions for participants in both conditions in Study 1 compared to Study 2.

### ***Negative Emotions***



Similar to Study 1, both conditions in Study 2 reported significantly lower negative emotions after completing either RS or PS. These findings are consistent with a recent investigation of anxious mothers of children with ASD (Pereira et al., 2021) and demonstrate that savoring interventions work for mothers of children with ASD. There were no specific advantages for RS as predicted, in either study, which may show that PS was more effective than anticipated. Clearly, mothers and parents in the ASD community experience negative emotions throughout the majority of the stages within their ASD journey. Specifically, mothers report experiencing dismissal when they bring their concerns to doctors and are told “not to worry” in the *pre-diagnosis* phase; a range and combination of emotions such as relief, devastation, guilt, and blame, during the *diagnosis* phase; feelings of frustration with the lack of time for themselves and their family during the *family life adjustment* phase; dissatisfaction with the support they receive from schools during the *navigating the system* phase (DePape & Lindsay, 2015). From a broaden and build perspective, both types of savoring interventions may have been an enjoyable break from mothers’ everyday routine and stresses such that both groups were less focused on negative emotions.

### **Relational Measures**

Relational measures included parenting satisfaction and feelings of closeness. Due to the strain of ASD on the mother-child relationship, engaging in RS was hypothesized to be better than PS because mothers would spend time reflecting on their relationship strengths in RS. However, the results showed that despite randomizing the assignment of participants to the conditions, the PS group was significantly higher than the RS group across all three timepoints. Although both groups increased from pre-savoring to post-savoring, the increase was not significant. This was an unfortunate occurrence in these data.

For feelings of closeness, similar to Study 1, there were no group differences or interactions (group x time) from pre-savoring to follow-up. Again, these mothers may have felt perfectly happy in their connection with their children, however, it is important to note that anecdotal reports during RS suggest that some mothers felt worried about their children reaching independence and some felt that their child needed them a lot. Study 2 included a one-time, in-person savoring experience plus three additional opportunities to practice savoring independently. The in-person savoring experience was aimed to ensure that parents would engage in high-quality, independent savoring. As discussed earlier, the quality of in-person savoring was significantly higher than that of the online savoring, but perhaps mothers would have benefited from additional in-person savoring experiences to shift the relational measures. In addition, perhaps 4-weeks was not enough time to impact the relational measure or more in-person savoring opportunities were needed to create change in these measures. Overall, neither type of savoring led to changes on the relational measures and the in-person savoring did not provide advantages to either group in terms of the relational outcomes.

### **Attachment-Related Measures**

#### ***Reflective Functioning (RF)***

There were no group differences or interactions (group x time) on self-focused RF, child-focused RF, or overall RF from pre-savoring to follow-up. These findings are inconsistent with previous research (Goldstein et al., 2019), and one possible explanation for these null results could be due to the measurement approach; that is, a highly truncated version (i.e., two sets of questions) of a semi-structured interview was used to assess for RF. Moreover, parents typed their responses rather than speaking them aloud and this may have negatively affected the participants and led them to provide less information in their responses. The decision to remove

the other items was experimental in nature and was driven by the desire to respect our participants' time and not ask identical questions before and after savoring. Another methodological issue regarding RF was that one question set asked mothers to think about a time when their child was rejected and this was difficult for some parents to answer, especially parents of nonverbal children. Some mothers reported feeling unaware of whether their children had experienced rejection, whereas other mothers could identify a time in which their child was rejected, but they were unclear whether their children were negatively affected by (or noticed the) rejecting behavior because the children's behaviors remained unaffected after the rejecting event. It is possible that more questions from the Parent Development Interview (Slade et al., 2004) or asking the parents to call in and speak their responses (Adkins et al., 2020) could have produced more variability to detect differences between the conditions or across time.

### ***Maternal Responsiveness***

The mother-child play interactions were coded for sensitivity, maternal responsiveness, and effectiveness, all of which were included in the maternal responsiveness subscale. The effect of time was significant, demonstrating both types of savoring led to mothers increasing these responsive behaviors. Again, this is more evidence that PS was a stronger comparison intervention than anticipated and parents benefited from both interventions in different ways. First, it is possible that different levels of maternal responsiveness in the RS and PS groups could have been observed in a larger sample. Second, it may be the two conditions are meeting different kinds of needs in mothers that both positively impact mothers' well-being, which then supports them to be more present, responsive, and effective when engaging with their children. Specifically, mothers in the RS condition may have felt empowered after reflecting upon times in which they were close to their children or met their children's needs. If they were able to feel

more connected and more positive about the interactions with their children, then this could have positively affected their ability to be present with their children after engaging in RS over time. Whereas mothers in the PS condition, may have been able to meet their individual needs to a better extent and this increased their psychological resources allowing them to be more present with their children after engaging in PS over time. Overall, this finding demonstrated a trickle-down effect such that when mothers engaged in either type of savoring, the quality of interactions between the parent-child dyad improved in terms of responsiveness to the child.

To understand the positive impact of PS and RS, narrative data was evaluated to see how these mothers were internalizing the savoring processes and perceiving the impact of both conditions (Table 16). Overall, statements from mothers in both groups suggested that they were experiencing beneficial impacts that were affecting their interactions with their children and additional family members. Mothers from both groups reported feeling grateful for engaging in the reflection process and for their connections with their children and other family members. Specifically, savoring responses during the final independent activity suggest that mothers appreciated the positive aspects of their experiences and that both types of savoring helped mothers be more attentive to their children and families and had positive impacts on their abilities to be mothers.

**Table 16**

*Final Independent Activity PS and RS Group Responses to the Final Savoring Questions  
(Italicized Portions Show RS as Intended and how PS Impacted Mothers' Lives and Families)*

**Final Savoring Questions:** “Let your mind wander in any way that you'd like about this event.” “Lastly, is there anything else that you would like to say about this memory or do you have any take-aways from engaging in this reflection process?”

PS Responses	RS Responses
<p>“... parents, especially of special needs children are burdened with guilt because they indulge in something for themselves. It's okay to do so. As simple as a walk or a drive around town or having coffee can help clear your mind and allow you to 'recharge'... <i>I think it helps me to become more focused, alert, and attentive towards my family.</i>”</p>	<p><i>“Taking the time to reflect, I recall specific details that I didn't even take the time to notice at the time. I didn't notice that CHILD was sweating but with this reflection, I can remember so clearly that in her anxiety about the shot, her little scalp underneath the part of her hair started sweating and I could smell it in her hair.”</i></p>
<p>“Time to myself allows me to relax, destress, refocus, think more positively, which I think is important for allowing me to feel as a whole person, my own person, <i>and a more positive-thinking person when I interact with my family.</i>”</p>	<p><i>“I am grateful to have participated in this process. ... I find so much of autism requires the parent/family to focus on what is not going well... so it is especially nice to have these focused moments to reflect on what is going well! ...”</i></p>
<p><i>“I think it's just as I said before which is reminding myself it is ok to take time for myself and much needed for my well-being, thus making me a better wife and mother too. It is nice to have time during the workday to reflect/be mindful.”</i></p>	<p><i>“...I'm grateful these days are few and far between and we understand more of CHILD's needs and how to help him. ...I am so grateful for all I get to learn to help my family excel beyond ASD.”</i></p>
<p><i>“... I feel like I can cope, even when things get very tough.”</i></p>	<p><i>“...I'm happy when CHILD allows me to be close to him and we can create good memories together.”</i></p>
<p>“As with all the positive activities, particularly those times that I take for myself, I think they are important for my overall health and well-being. <i>In order to be strong for my family I need to make sure that I make time for me.</i>”</p>	<p><i>“Engaging in this activity over time has helped me clear my head and use my time with my child and family more effectively... It has made our days more lively and fun. My spirit is more positive and relaxed. I am not as stressed. And I think this has made my husband and children happier as well. I feel like the reflection activity is really important to do especially for caretakers of special needs children. We need it and have a hard time making time for ourselves and are just burnt out. It is a lot of negative energy and we question ourselves and capabilities. As busy as we are, this reflection activity is actually doable and I believe has made a positive impact on me as a mother.”</i></p>

Note. Responses are verbatim with corrected spelling errors.

As shown in the examples in Table 16, some RS mothers reported seeing interactions with their children in a new light and having a better understanding of their child's internal states. Mothers described finding RS helpful, feeling grateful, and experiencing the benefits of the savoring exercise for themselves as well as during the interactions with their family. In addition, mothers in the PS group shared that prioritizing themselves led to positive outcomes for themselves personally, in their marriages, and also during interactions with their children. These reported impacts could explain why we saw the increase in maternal responsiveness in this group as well. Perhaps the potent ingredient in both of the interventions was that mothers benefited from the mindfulness and the unique opportunities to look at themselves or their relationships with their children in new and positive ways.

### ***Maternal Affect***

The mother-child play was also coded for affect/animation. There were no group differences or interactions (group x time) for maternal affect. The maternal affect subscale included several items including acceptance, enjoyment, expressiveness, inventiveness, and warmth. One explanation for the null effects could be that these constructs were not affected by either intervention.

### **Strengths and Limitations**

These studies compared the effects of RS and PS in mothers of children with ASD, and assessed outcomes associated with internal resources such as positive emotion and parenting satisfaction and the risk factor of negative emotions such as distress, guilt, fear, and irritability. A methodological strength of the project was that the interventions were administered in two modalities (online and in-person). In addition, there are certain strengths of both interventions. First, both interventions included fidelity of implementation data to assess the extent to which

participants engaged in the online savoring as planned and the extent to which interveners implemented the in-home savoring protocol as designed. Good fidelity for the in-person study was achieved. Also, the in-person study included acceptability data demonstrating the extent to which the parents found the interventions acceptable and these data are often lacking in investigations of parent interventions (Dawson-Squibb et al., 2020). Both studies included an intervention that was brief and easy to complete.

Second, research assistants observed parent-child dyads in the home and could be seen as a strength of Study 2 because we observed the parent-child interaction in a setting in which the dyad frequently interacts. Third, there was a strong theoretical basis for the study design. For example, the emotion-related outcomes and relational outcomes (e.g., parenting satisfaction) were theoretically linked to savoring because savoring is based in the broaden and build theory. In these studies, when mothers engaged in savoring, this should have resulted in an upward spiral of positive emotions and enhancement of relationship outcomes. Similarly, attachment outcomes were theoretically linked to attachment theory. When mothers engaged in RS, they focused on the positive aspects of moments in which parents were extremely close with their child or helped their child explore and learn or met their child's needs as a safe haven, and this would have activated the attachment system. This activation would in turn lead to positive emotions regarding their important bond with their child and about the strengths of this bond, which in turn should positively impact attachment-related outcomes (e.g., maternal responsiveness).

In contrast, some important limitations deserve attention. First, the in-home study was significantly underpowered due to the small sample. Increased power through a larger sample size may have led marginal effects to reach significance, but the studies yielded nice narrative data that enabled us to understand some of the null findings and promise of future research

findings. Second, due to a preparation error, Study 1 and Study 2 did not have the same savoring protocols. However, this was not problematic because the goals were not to compare the studies. Third, recruitment was problematic and both studies each had their difficulties with obtaining enough participants. Recruitment for the in-person study was a significant limitation. The goal of the study was to recruit 100 participants and we enrolled 63 whom completed the study. The shelter-in-place orders resulting from the COVID-19 pandemic forced in-person data collection to halt. Also, in the online study, there were limitations such as attrition, participants not finishing the study within the 2-hour time limit, and false responses from automated form fillers that led to nearly 2,000 responses of unusable data.

### **Implications and Future Research**

The Autism Collaboration, Accountability, Research, Education, and Support (CARES) Act of 2019, first enacted in 2006, requires caregiver mental health to be addressed showing an awareness of the importance of this growing issue. It's unclear the extent to which state agencies and treatment providers are already collaborating with the research community to help establish and incorporate evidence-based practices that support parents in prioritizing self-care and strengthening the family unit, but perhaps parents of autistic children could benefit from self-care activities being “programmed” into the treatment packages within the parent education/training programs that they receive. The self-care arm of the existing programs could help parents to prioritize their mental health to ensure that they can optimally support themselves, their children with ASD, and their families. Based on data collection during Study 2, it was concerning that some mothers in the in-home PS condition found the task of identifying a personal memory to savor difficult and potentially frustrating. However, for mothers who could reflect on a self-focused memory, it was often gratifying. For example, the participant responses in Table 16



showed examples of the parents wanting time for themselves and either being unable to or being inundated by grief. If parents struggle to find time or prioritize their personal well-being, but benefit from the few times when they do, then future research could examine the potential barriers preventing parents from building their psychological reserves through savoring. As the prevalence of ASD continues to rise, parental well-being is a necessary component to support family-centered care. Indeed, clinicians and treatment providers can support this growing population by normalizing and validating parents' need to nurture their well-being and supporting them in "securing their mask first." Recent research suggests that adults with ASD may face barriers when engaging in self-care practices such as maladaptive coping behaviors (i.e., self-harm, substance abuse disorders) and a lack of motivation (Waldron et al., 2021). Parents' abilities to model, promote, and advocate for personal self-care behaviors may be very important for later cohorts with ASD who enter adulthood and are in charge of managing their health and well-being.

Future research could benefit from replicating these studies and also assessing whether child-related outcomes are positively affected by savoring. It remains unknown whether benefits associated with RS could positively affect the child's social behaviors with the parent or other family members. Although the current study focused solely on mothers, it would be important to learn the impact on savoring for fathers of autistic children as well. In addition, savoring as a family could help turn negative or difficult experiences within a family into times when the family is able to savor events in which the child with ASD was flourishing.

Finally, receiving and responding to any medical diagnosis is a process that takes time and includes varying feelings and experiences at different stages. For instance, parents' receiving a diagnosis of ASD is associated with negative feelings such as grief, guilt, loss, or mixed

feelings such as negative emotions as well as the relief of confirming and learning about a diagnosis. Resolution through a diagnosis is associated with positive outcomes for parents and children (Milshtein et al., 2009; Oppenheim et al., 2009) and could impact the extent to which parents are able to experience gains during interventions. Future studies could test whether parental resolution with the ASD diagnosis moderates the relation between savoring and parent outcomes. This knowledge could be important for clinicians to understand how resolution of a diagnosis affects parents and whether parents benefit more from savoring at different points of their ASD journey (*post-diagnosis* phase versus *navigating the system* phase).

## **Conclusion**

The goals of these studies were to contribute to the research regarding intervention approaches to increase psychological resources in mothers of children with ASD and to test whether RS promoted positive outcomes for these mothers compared to PS. Overall, the online study results demonstrated that online savoring (both RS and PS) was associated with decreases in negative emotion. Results from the in-home study indicated that in-person savoring (both RS and PS) led to increases in positive emotions, decreases in negative emotions, and increased maternal responsiveness. These studies predicted that RS would be associated with better outcomes, yet these findings indicate that mothers of autistic children can benefit from RS and PS. In general, the benefits of savoring demonstrated here (but not from RS in particular) suggest that savoring is a promising intervention to augment psychological resources for mothers of children with ASD.

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