EVALUATING THE MARSCHAK INTERACTION METHOD: CONVERGENT VALIDITY IN SOCIAL EMOTIONAL ASSESSMENT OF YOUNG CHILDREN

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DISSERTATION ABSTRACT

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Assessment and identification of young children with developmental needs are crucial aspects of a well-functioning early childhood mental health system. Tools that are valid and provide guidance for treatment of relationship problems in early childhood are scarce. The current study explores the convergent validity of the Marschak Interaction Method (MIM). A sample of 50 caregiver-child dyads were administered the MIM and a battery of related assessments including the Ages and Stages Questionnaire: Social Emotional, the Child Behavior Checklist, the Parenting Stress Index, and the Social-Emotional Assessment/Evaluation Measure. Regression and correlation results provided mixed evidence for the convergent validity of the MIM. The MIM, however, appeared to be related to social and emotional risk and appeared to reliably predict intervention need. More research is needed to explore the applications of the MIM in early childhood mental health systems.

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CHAPTER I

RATIONALE

Social, Emotional, and Relational Assessment of Young Children

Research demonstrates a high prevalence of mental health disorders among young children, with an estimated 9-11% of young children experiencing internalizing and externalizing problems that often lead to persistent mental health struggles that impact future development and academic performance (Briggs-Gowan & Carter, 2008; Egger & Angold, 2006; Hanson et al., 2013; Luby, Si, Belden, Tandon, & Spitznagel, 2009; Shaw, Lacourse, & Nagin, 2005). Historically, early mental health problems are often overlooked (Lavigne, LeBailly, Hopkins, Gouze, & Binns, 2009; Pavuluri, Luk, & McGee, 1996; Sheldrick, Merchant, & Perrin, 2011; Stagman & Cooper, 2010). Lavigne et al. (2009) found that only 3% of preschoolers with mental illness had received services prior to preschool, despite the widely held notion that "early is better" when it comes to social and emotional intervention. Alongside these concerns, there is also a growing understanding that when young infants, toddlers, and preschoolers demonstrate signs of social and emotional delays or disturbances, including behavioral and regulatory problems, efforts should be made to understand these delays in the context of the parent-child relationship (Dickson & Kronenberg, 2011). Indeed, the most common reasons for referrals to infant mental health clinics in the early months of life include both infant regulatory problems (such as excessive crying and feeding problems) *and* problems associated with bonding and attachment, underscoring the complex and bi-directional link between parent-infant synchrony and the development of infant regulation, as well as the need to assess both the young child *and* the parent-child relationship when there are

signs of early problems (Keren, Feldman, & Tyrano, 2001; Schore & Schore, 2007). Recognizing this link between relational environments and early development, the young but rapidly developing field of infant mental health (IMH) has emerged explicitly around a relational framework pertinent to young children. In this framework, there is consensus that responsive parent-child relationships serve as a stabilizing and nurturing "holding environment" from which the developing child is free to explore and develop, and that supporting a caregiver-child relationship holds more promise than applying a strictly medical model in which children receive treatment in isolation from their relational environments (Bowlby, 1953; Zeanah & Lieberman, 2016). Likewise, in the related fields of Early Intervention (EI) and Early Childhood Special Education (ECSE), Bronfenbrenner's ecological model of contextualizing childhood development within the child's relational and community context has been influential (Bronfenbrenner, 1979; Odom & Wolery, 2003). This approach acknowledges the complex, layered effect of a child's neurobiological, cultural, and relational endowment on both current and future developmental functioning (Gleason & Zeanah, 2010; Shonkoff et al., 2012). The Division for Early Childhood's (DEC) Recommended Practices include a focus on promoting sensitive and responsive interactions in order to drive effective intervention (Division of Early Childhood, 2014). In this context, sensitivity refers to the caregiver's ability to accurate appraise the "meaning" or need behind a child's behavior cues or states. Related to this an accurate appraisal of a child's behavior is responsivity, which refers to a caregiver's ability to provide a "good enough" response to that cue (e.g. a parent sees her infant yawn and promptly rocks her to sleep). In recommended practices related to interaction, sensitive and responsive interaction is connected to broader

developmental needs: “Sensitive and responsive interactional practices are the foundation for promoting the development of a child’s language and cognitive and emotional competence. These interactional practices are the basis for fostering all children’s learning” (Division of Early Childhood, 2014, p. 14). Thus, addressing the contextual needs of young children is an issue that cuts across key fields and institutions serving young children.

Decades of empirical research support this shift toward relationship-focused assessment and interventions. Shonkoff et al. (2012) argue that a child’s closest caregiving relationships provide a far more accurate predictor for future outcomes over and above an examination of a child’s individual characteristics. While the longitudinal pattern of association between parental sensitivity and child outcomes is debated (see Fraley, Roisman, & Haltigan, 2013), several longitudinal analyses support the assertion that early relational experiences have enduring implications for development and adaptation all the way into adolescence and adulthood (Fraley et al., 2013; Grossmann, Grossmann, & Waters, 2006; Raby, Roisman, Fraley, & Simpson, 2015; Sroufe, Coffino, & Carlson, 2010; Sroufe, Egeland, & Kreutzer, 1990). Interestingly, the impacts of maternal sensitivity seem to have a larger effect on academic competence over social competence, although leading models indicate that both domains are affected by quality of interactions (Fraley et al., 2013; Raby et al., 2015). This finding may seem counterintuitive on the surface, but parental sensitivity also includes the ability to structure and support a child just outside of their “zone of proximal development,” a concept also conceptualized by Booth and Jernberg (2010) as offering “challenge” in the context of secure attachment (Vygotsky, 1978). Given the impact of early interactional

quality on future academic competence, fields that address developmental and academic readiness and competence, such as EI/ECSE, have good reason to also address early interactions in order to promote development across domains, including social, emotional, cognitive, adaptive, and academic domains of development, regardless of biological, circumstantial, and genetic vulnerabilities a child may possess. In fact, some have argued that the relational context of development, rather than representing just another category of development, is *foundational to* other areas of development in a unique way, meaning that sensitive relationships promote development, and robust development promotes the development of secure relationships (National Scientific Council on the Developing Child, 2007). Zeanah and Lieberman (2016) have also highlighted the importance of identifying disturbances in relationships, rather than solely identifying delays in individual children. In the Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood (DC:0-5), new classifications and codes provide for the identification of adaptation and maladaptation in relationships, as well as the characterization of the constellation of a child's primary relationships (Zeanah and Lieberman, 2016).

Regardless of the exact relationship between development and relational contexts, research has identified that early experiences in close relationships have enduring impacts on young children, predicting numerous outcomes even up to adulthood (Masten, 2012). Gaining understanding about the parent-child relationship, especially when young children are being assessed for emotional, social, and/or behavioral disturbances, is an inherently valuable process, and a large body of literature demonstrates the effectiveness of timely intervention in which caregivers gain skills related to sensitivity and

responsivity (Berlin, Zeanah, & Lieberman, 2008; Bernard, Meade, & Dozier, 2013; Gleason & Zeanah, 2010). Whether due to transactional processes related to a child's disability or delay that potentially make parental sensitivity more challenging (e.g. autism or language delay) and/or to aspects of the child's relational environment that are conducive to parental insensitivity (e.g. stress, trauma), relationships have the power to change developmental trajectories and may serve as buffers when risks outside of the parent-child relationship are present (Gleason & Zeanah, 2010). Thus, the need to assess and cultivate interactional capacities seems to be a continuing priority for both the fields of IMH and EI/ECSE. Because interactional problems have the potential to impact development directly, and serve-and-return interactions are a powerful force in improving any child's developmental trajectory, no matter the etiology of the delay or disability, identifying accurate, efficient, and authentic relational/interactional assessments that are psychometrically valid is an important goal for both fields going forward.

Trauma and stress. Another area of overlap related to EI/ECSE and IMH is the assessment of social and emotional development in children with trauma backgrounds. Specifically, the population of children within the IMH and EI/ECSE systems who have experienced maltreatment and other types of trauma and "toxic stress," are increasingly being served by the EI/ECSE system (Corr & Santos, 2017). These children, by nature of the types of trauma (i.e. abuse, neglect, exposure), frequently have experienced a lack of sensitive and consistent caregiving, leading to developmental and regulatory inequalities that cannot be addressed by the IMH system alone (Cecil, Viding, Fearon, Glaser, & McCrory, 2017; Van der Kolk, 2017). For children with trauma histories, there can be a "double liability" in which a child is both sensitized to fear and unable to access

caregivers for soothing at the same time; this double risk my lead to a cascade of developmental problems when unaddressed (Cook, Blaustein, Spinazzola, van der Kolk, 2005). Casanueva, Cross, and Ringeisen (2008) investigated the developmental needs of children in the Child Welfare System (CWS), most of whom can be defined as having experienced trauma. Their data suggest that by age 3, 41.1% of children involved with CWS will need ECSE services, and 42.0% of school-aged children involved with earlier CWS will need special education. In response to the considerable overlap between CWS involvement and developmental concerns, a 2003 amendment of the Child Abuse and Prevention Act (CAPTA) included provisions for the referral for screening of children with maltreatment histories for Part C Early Intervention. This policy shift demonstrates the aforementioned increasing recognition of the relationship between relational trauma and early development and underscores the need for accurate and efficient screening *and* assessment of young children with relational trauma within systems that are focused on a range of developmental issues (i.e. EI/ECSE). Following the lead of the identification of relational disturbances in Zero to Three's Diagnostic Criteria 0-5 (DC:0-5), researchers in EI/ECSE have also recognized the need to research and develop assessments of the relational environment of a child as it pertains to the child's social, emotional, and global development. To address this gap in practice, more research is needed to determine the validity of measures to address the growing social and emotional assessment needs of the EI/ECSE system.

Characteristics of Effective Emotional and Relational Assessment of Young Children

Historically and even currently within certain systems, it is common for a young child's functioning to be assessed outside of the context of their relational environment or without representing a child's functioning with reference to regulatory dynamics between parent and child, that is, how effectively the child uses caregivers to regulate her body and behavior (Dickson & Kronenberg, 2011). Traditional medical models often favor a diagnostic approach, which generally does not include relationship factors. For very young children, this approach is problematic for several reasons. First, there is limited evidence for the validity of applying mental health diagnostic labels to young children. Second, many in the field agree that taking a "risk-based" approach is far more beneficial, given that many infants, toddlers, and young children are pre-symptomatic but still very much at risk for developing poor mental health later on (Gleason & Zeanah, 2010). This prevention-based approach is valued in fields such as IMH where relational assessment is far more common. In fact, historically, the field of IMH has distinguished itself from the rest of the mental health system primarily through this relationship-based framework for assessment and prevention (Zeanah & Zeanah, 2009). A Zero to Three steering committee charged with defining IMH emphasized caregiving environments as the context for healthy social and emotional development, naming these relational environments as the foundation of social and emotional competencies (Zero to Three, 2001). The explicitly relational nature of assessment in IMH is reflected in the DC:0-5, where the primary caregiving relationship is a driving factor for defining problems in infancy (Zero to Three, 2016). However, despite an explicit commitment to impacting the

social contexts of young children, there are relatively few standardized and psychometrically valid tools for assessing caregiver-child interaction that both a) can be utilized by transdisciplinary services providers, and b) are useful in planning treatment/intervention that is functional and relationship-based. Assessments useful for planning treatment/intervention will provide information about the primary caregiver's perceptions of the child, the caregiver's interactive behavior with the child, *and* the child's interactions with caregiver (Gleason & Zeanah, 2010). Observing interactions, in addition to eliciting parent report about the child and the relationship, may be one way of effectively gleaning "two truths" at once about the interactional capacities within the relationship (Carter, Godoy, Marakovitz, & Briggs-Gowan, 2009). Relationship-based assessment should also reflect the strength-based approaches employed in both IMH and EI/ECSE. Eliciting and enhancing the aspects of parenting that a parent finds enjoyable is potentially more impactful than identifying areas of pathology in the relationship (Meisels & Fenichel, 1996). Related to the idea of focusing on strengths in addition to risks, certain aspects of relational assessment can be considered an intervention effort (Zeanah & Zeanah, 2009). For example, a parent-reported assessment may allow a parent to pause and reflect on caregiving or view their child in a different way, or an observational assessment may allow a stressed caregiver to slow down with an infant to notice the signals he/she may be trying to send. The screening and assessment process also often initiates a process in which a parent may be "seen and felt" by the transdisciplinary service provider involved with the family, potentially introducing a human resource (i.e. the practitioner) from which a parent can draw strength and encouragement.

Important behavioral and relational indicators. While the idea that infants and very young children experience psychopathology per se is controversial, there is some consensus within the developmental literature about vital precursors to the development of robust mental health later in life. Some of these behavioral indicators include emotional regulation, the ability to communicate with caregivers (including nonverbal communication), and exploration of the environment (Zeanah & Zeanah, 2009). When assessing infants with social and emotional risks, these factors should be included. Other questions to be answered include: Does the infant have a relationship with a caregiver who is responsive and sensitive to their needs, and Can the child elicit positive support from caregivers? (Werner, 2004). Finally, the Neurorelational Framework introduces the idea of toxic stress patterns, in which a young child's as well as a caregiver's capacity to "bounce back" in the face of everyday stress are assessed (Lillas, 2017). While there are many aspects of development and relationships worthy of examination, it seems that one way of conceptualizing the overall intent of early prevention and assessment is through the lens of regulatory capacity. Can and does the child regulate herself in a developmentally appropriate manner, and Is/Are there adult(s) available to support the journey from other-regulated to co-regulated to self-regulated in the first six years of life? For infants, this generally means that in the earliest stages of development, they have very little capacity to self-regulate and must rely on the care of adults (rocking or feeding behavior, for example) to move from hyper-or-hypoarousal states into a "green zone" state of calm (Lillas, 2017). As a child grows into toddler hood and then into the preschool years, he or she develops the ability "calm herself by herself," with varying degrees of support from an adult. Throughout this continuum, if a child becomes

regularly “stuck” in states of hyper-hypoarousal, the child will spend an unhealthy amount of time outside of the calm alert state, the state most conducive for engagement and development. Furthermore, the physiological processes associated with hyper-and-hypoarousal states create “wear and tear” on the body that may translate to disease process later in life (Bucci, Marques, Oh, & Harris, 2016). In addition, a child who lacks the co-regulation required to spend most of his or her time in a calm or sleeping state will likely manifest with behaviors not conducive to development such as frequent and intense tantrums, agitation, poor sleep and feeding, somatic problems, withdraw, and/or lethargy (Lillas, 2017). In addition, children experiencing chronic and prolonged unhealthy stress states are at higher risk to develop mental and behavior health struggles later in life such as depression, panic, anxiety, and addiction (Kalmakis & Chandler, 2015). While individual responses to prolonged stress are highly variable and mediated by a variety of genetic and contextual factors, there is a growing understanding that developing co-regulatory support and social resilience (i.e. the ability to use relationships to “bounce back”) for at-risk infants and young children should be one key function of early childhood systems (Bucci et al., 2016). Supporting families in these capacities through proper assessment and prevention/intervention activities may establish a positive developmental trajectory in families experiencing high risk for future problems.

Current assessment needs in EI/ECSE and IMH. As researchers and policymakers urge early prevention efforts that focus on social and emotional competencies such as resilience (Zeanah & Zeanah, 2009), systems related to and overlapping with IMH have increasing calls to assess regulatory and relational capacities within the dynamic and rapidly changing period of early development. While many

practitioners may be adept at using observation to inform prevention, the variation in training as well as the fragmentation often experienced within fields that serve young children at risk for regulatory disturbances (e.g. CWS, EI/ECSE, IMH, and the private sector) translates to the wide variation in quantity, quality, and nature of assessment occurring in real-world practice. In addition, given the extreme funding constraints of many of these systems, there is tremendous need for screening and assessment tools that are as cost-effective and as efficient as possible, while also providing accurate data about positive and supportive interactions and potential intervention approaches for families with young children.

Current Study

The current study examines one promising tool that may meet the aforementioned systemic needs and priorities of systems that commonly serve young children and their families, the Marschak Interaction Method (MIM). The MIM is a structured observation tool used for treatment planning in Theraplay, an evidence-based practice for treating regulatory and relational difficulties in early childhood (Tucker & McGirl, 2016). The aim of the current study is to establish the validity of the MIM using validated tools such as the Ages and Stages Questionnaire: Social Emotional (ASQ:SE), the Child Behavior Checklist (CBCL), the Parenting Stress Index (PSI), and the Social-Emotional Assessment/Evaluation Measure (SEAM) and SEAM Family Profile (SEAM FP). This study examined the convergent validity of the MIM with EI/ECSE eligibility in the state of Oregon, as well as the convergent validity of the Parenting Stress Index (PSI) with the Emotional Interaction Style (EIS) of a dyad as identified by the MIM. Finally, using mixed methods, the study explored the acceptability (i.e. Is the method socially

acceptable to families?), and feasibility (i.e. Is it easy to implement in the field?) of these measures within environments that serve at-risk infants, toddlers, and preschoolers. It was hypothesized that MIM ratings would be highly correlated with established tools, and that the MIM would be a positive experience for participants. Finally, it was expected that the MIM would provide additional information about the co-regulatory relationship not commonly assessed by tools used in the field.

Objectives

1. Examine the agreement between MIM parent-child interaction style as determined by the Dyadic Emotional Interaction Style (D-EIS) coding system and convergent measures including the ASQ:SE/CBCL//PSI-SF/SEAM.
2. Examine the agreement between MIM parent-child interaction style as determined by D-EIS coding system and EI/ECSE/IMH eligibility.
3. Explore parents' perceptions of MIM compared with similar convergent measures including the SEAM and SEAM FP.

CHAPTER II

LITERATURE REVIEW

Sensitivity and Attachment

As mentioned, parental responsivity to a child's signals and cues is highly predictive of various outcomes related to a child's social and emotional development (Ainsworth, Bell, & Stayton, 1974). Research has linked sensitive parental behaviors to the development of secure attachment, which is linked to positive outcomes across the lifespan (National Scientific Council on the Developing Child, 2015). Attachment theory posits that securely attached infants use an organized strategy to seek safety and soothing from a caregiver while also maintaining autonomy and an exploratory approach to the world (Bowlby, 1953). This, in turn, supports the development of social and emotional competencies as well as a robust nervous system and resilience under stress (National Scientific Council on the Developing Child, 2015). In an updated conceptualization of attachment theory, Schore and Schore (2007) define attachment with respect to regulation. In this conceptualization, the attachment relationship is analogous to a co-regulatory relationship where the "attachment relationship mediates the dyadic regulation of emotion, wherein the mother (primary caregiver) co-regulates the infant's postnatally developing central (CNS) and autonomic (ANS) nervous systems" (Schore & Schore, 2007, p. 3). In this view of attachment, sensitive and responsive caregiving is the way in which an infant's emotions, body, and nervous system are supported while still developing. The absence of effective co-regulation, therefore, has global repercussions for the developing child (Schore, 2001).

While secure versus insecure attachment is a helpful distinction, many researchers consider attachment to be a more distal concept, and for the purpose of designing effective interventions, have focused on *precursors* to secure attachment, preferably behavioral precursors that are amenable to modification (Bakermans-Kranenburg, van IJzendoorn, & Juffer, 2005; Facompré, Bernard, & Waters, 2018; Lyons-Ruth & Jacobvitz, 2008). As explained, lack of parental sensitivity is one possible precursor to the development of less effective attachment strategies in infants. Put in cognitive-behavioral terms, insensitive caregiving refers to a caregiver's inability to notice and interpret an infant's cues accurately and to then provide a developmentally appropriate behavioral response (e.g. "I swaddle you when you yawn and fuss"). Many antecedents to insensitive caregiving behavior have been identified including maternal depression, poverty, and parental substance abuse (Cyr, Euser, Bakermans-Kranenburg, & van IJzendoorn, 2010; Melnick, Finger, Hans, Patrick, & Lyons-Ruth, 2008; Toth, Rogosch, Manly, & Cicchetti, 2006; vanIJzendoorn et al., 1999). Through complex and overlapping processes, these factors may contribute to a parent's inability to modulate a child's distress and to provide consistent, developmentally appropriate responses to an infant's needs. In extreme cases, insensitive caregiving can lead to maltreatment and trauma, with devastating consequences for an infant's well-being and development. Conversely, less effective attachment strategies (e.g. a language delay that leads to less expression of need) can contribute to the development of less sensitive caregiving. There is evidence that children experiencing cognitive and/or language delays are at risk for social and emotional delays (Briggs-Gowan & Carter, 2007), and that certain disabilities or delays may impact the development of a "good enough" parenting relationship (Corr

& Santos, 2017). While antecedents to insensitive caregiving also need to be addressed through policies, services, and interventions that reduce poverty, treat addiction, or provide respite and support to parents raising children with disabilities, systems that address the infant directly (e.g. IMH) have often focused on directly altering the caregiving environment in order to improve infant outcomes.

When trauma and/or toxic stress is a part of a family's story, the presence of a strong, nurturing, and sensitive caregiver is essential and has the potential to enhance a child's resilience in the face of such challenges (Yoches, Summers, Beeber, Harden, & Malik, 2012). Young children in particular look to their caregivers to the "be the answer" (MacNamara, 2016) in the face of uncertainty and challenge, and a secure parent-child relationship can provide a powerful base from which to heal from trauma. Therefore, treatments, *whenever possible,* should not only target the child, but also the relational environment of the child, so that both child and parent can benefit from growth in caregivers' capacities. In a family-based model of intervention, caregivers are supported in how to regulate the environment of the child to create felt safety, while also mentoring a child in how to regulate himself in a developmentally appropriate manner (Purvis, Cross, Dansereau, & Parris, 2013).

Facompré et al. (2018), in an update of Bakersman-Kranenburg et al.'s 2005 meta-analysis, examined 16 studies about interventions designed to prevent disorganized attachment by targeting either sensitive parenting behavior and/or altering parent's attachment representations (i.e. how a parent views a child with respect to the relationship). Interventions targeting sensitivity usually combine behavioral skills training related to sensitivity with intervention that targets a parent's perception or

representation of her child. Interventions that were effective employed a variety of techniques including psychoeducation, in vivo coaching, video feedback, home visiting, and/or the facilitation of attachment-based play. The meta-analysis found that more recent interventions (2006-2016) aimed at impacting attachment (e.g. attachment and biobehavioral catch-up, infant-parent psychotherapy) were effective in preventing disorganized attachment with an effect size of $d = 0.35$, and that interventions targeting samples with maltreatment histories were more effective. In addition, the authors of the meta-analysis found that of all 16 studies, those targeting parental sensitivity in particular (as opposed to parental representation or reflection) had an average effect size of $d = .051$ (see Table 1). These findings support previous research findings, concluding that parent-child relationships are "plastic," and that targeting insensitive parenting behavior is an effective way to not only prevent disorganized attachment but to also impact other important areas of functioning (Facompré et al., 2018). By altering current functional capacity of parents and thus improving developmental outcomes for young children, there seems to be potential for trajectory changes in the social and emotional development of young children (Bakermans-Kranenburg, van IJzendoorn, & Juffer, 2005; Facompré et al., 2018; Lyons-Ruth & Jacobvitz, 2008).

Other related interventions have also effectively targeted internalizing and/or trauma symptoms in young children through strategies that enhance the parent-child relationship. For example, Alicia Lieberman and Patricia Van Horn (2008) developed Child-Parent Psychotherapy (CPP) as a relationship-based treatment designed specifically to address trauma in children prenatally up to five years old (Lieberman & VanHorn, 2008; National Child Traumatic Stress Network, 2012). The CPP-trained therapist acts as

Table 1

Effects of Interventions Targeting Disorganized Attachment

Study	Intervention Strategy	*p*	*d*
Bakermans-Kranenburg et al. (1998)	Video Feedback and Attachment Discussions	.61	-0.30
Bernard et al. (2012)	In Vivo Feedback and Behavioral Coaching	.01	0.57
Cassidy et al. (2011)	Parent-focused Video Feedback	.51	0.15
Cicchetti et al. (2006)	In Vivo Feedback and Parent Training	.00	1.10
Cooper & Murray (1997)	Clinical Treatment for Postpartum Depression	.33	-0.27
Egeland & Erickson (1993)	Sensitivity Training and Attachment Discussions	.01	-0.59
Gelfand et al. (1996)	Nurse Home Visiting with Reflection/Modeling	.53	0.19
Heinicke et al. (1999)	Home Visits with Reflective Listening and Support	.16	0.51
Juffer et al. (2005)	Sensitivity Training via Video Feedback	.03	0.82
Lyons-Ruth et al. (1990)	Home Visiting	.37	0.39
Moran et al. (2005)	Sensitivity Training via Video Feedback	.93	0.02
Moss et al. (2011)	Sensitivity Training via Video Feedback	.00	0.90
Sadler et al. (2013)	Home Visiting to Support Positive Representations of Baby	.15	0.41
Sajaniemi et al. (2001)	In-home Infant Occupational Therapy	.08	0.59
Toth et al. (2006)	Toddler-parent Psychotherapy	.00	0.95
van den Boom (1994)	Sensitivity Training	.51	0.25

an emotional and developmental "translator" between caregiver and child and employs simple strategies to promote understanding, trust, shared joy, and competent parenting practices in addition to helping the parent and child construct coherent trauma stories and cope with trauma reminders (Lieberman & VanHorn, 2008). Three randomized controlled trials and several additional studies have demonstrated the effectiveness of CPP for impacting a variety of outcomes including trauma-related symptomatology in addition to security of attachment (National Child Traumatic Stress Network, 2012).

Another example of effective relationship-based treatment that can be applied across a variety of contexts and symptoms in dyads with young children is Theraplay. Theraplay is a short-term family therapy focused on building trust and attachment between caregiver and child through healthy and playful parent-child interactions. During sessions, therapists guide dyads through a sequence of playful games and nurturing activities designed to enhance attachment relationships. Throughout sessions, the therapist guides the parent in regulating child behavior while also communicating delight and safety to the child (Booth & Jernberg, 2010). Siu (2009, 2014) conducted two randomized controlled trials evaluating Theraplay and found decreased internalizing behaviors and increased social communication in children receiving Theraplay treatment.

Overall, current evidence demonstrates the effectiveness of intervening early when bidirectional influences disrupt the development of sensitive and responsive parenting behaviors (Facompré et al., 2018). Based on research reviewed, a variety of techniques can be used to provide effective relationship-based interventions. In addition, there is growing consensus that targeting parental sensitivity is one way to have a broader impact on a child's overall development (Raby et al., 2015).

Features of Effective Social and Emotional Assessment

The natural extension of these findings is that providing "the right dyads" access to preventative interventions requires effective practices to identify dyads that need support in the development of a sensitive, co-regulatory relationship. Furthermore, establishing a baseline understanding of how a dyad is doing aids interventionists in understanding the dyad's response to intervention in order to monitor and plan intervention over time.

Screening and assessment tools that effectively identify needs and strengths in the relationship support the preventative work examined by Facompré and colleagues (2018). Key features of effective early social and emotional assessment include the examination of the functional and behavioral competencies and skills or deficits in a dyad. This includes behavioral features of the parent-child relationship such as shared attention, shared joy, matching behaviors, reciprocity, and the communication of and response to signals in addition to more classically assessed childhood behaviors (Gleason & Zeanah, 2010). The extent to which the parent can anticipate a child's needs and provide affective, regulatory, and physical structuring of the child's environment can also be defined and assessed functionally through a variety of tools, providing important insight about the intervention needs of a family (Carter et al., 2009). Assessment should also be conducted in a linguistically and culturally sensitive manner, allowing for flexibility, adaptation, and translation to cultural norms and home languages (Miron, Lewis, & Zeanah, 2009). Finally, there is agreement in the field that not only should social and emotional assessment include a child's social and cultural environment, but that it should be done so in a way that highlights strengths and skills, rather than only liabilities and deficits.

Through a strengths-based approach, positive partnerships can be built between interventionists and families, and assessment can support intervention efforts through the building of trust and shared positive sentiment toward the family and child (Carter, Briggs-Gowan, & Davis, 2004; Squires, Bricker, Waddell, Funk, Clifford, & Hoselton, 2014).

While an exhaustive examination of all of the tools used in early childhood emotional assessment is beyond the scope of this study, a look at selected types/tools available may help to identify the strengths and needs of the field in this area, as well as highlighting key features in common tools that assess emotional development and sensitive caregiving. Several tools have been identified as useful in general and/or at-risk populations to screen and identify or assess young children without employing typical psychiatric assessment components, which can be time-and-money consuming, in addition to having little relevance to the relational health of the infant, toddler, or preschooler (Gleason & Zeanah, 2010; Zeanah & Lieberman, 2016).

Standardized Parent Report Tools

Some have argued that parent report is an unreliable source of information about a child's social and emotional development. Indeed, several studies have identified problems with parents knowing "when to worry," as well as high variability in pediatric professionals' ability to identify problems early on (Ellingson, Briggs-Gowan, Carter, & Horwitz, 2004; Sheldrick et al., 2011). It may be that parents' lack of knowledge relevant to healthy development in combination with shame and stigma regarding early developmental problems may lead to a reluctance to identify social and emotional problems in particular. This is reinforced by a "wait and see" attitude common in

professionals providing primary care to young children (Carter et al., 2009). However, because a parent's representation or experience of a child or relationship impacts his or her behavior, and thus child outcomes, it is essential to gain a picture of the child and relationship through the lens of the parent. Furthermore, through the use of social and emotional assessments that are norm-referenced, standardized, and evaluate specific behaviors (versus parental worry, for example), it is possible to gain an accurate picture of developmental needs in this domain (Carter et al., 2009). Two examples of these types of tools include the Ages and Stages Questionnaires: Social-Emotional (ASQ:SE-2), the Social and Emotional Assessment Measure (SEAM) and the Brief Infant-Toddler Social and Emotional Assessment (BITSEA) (Briggs-Gowan & Carter, 2006; Squires, Bricker, & Twombly, 2002).

ASQ:SE-2. The ASQ:SE-2 is a high-quality parent-completed screening tool focused solely on social and emotional development in young children. The ASQ:SE-2 was developed to complement the Ages and Stages Questionnaire (ASQ), a widely used global developmental screener. The ASQ:SE-2 provides a closer look at social and emotional behaviors in children from ages 1 months to six years at the following intervals: 2, 6, 12, 18, 24, 30, 36, 48, and 60 months (Squires & Bricker, 2009). The ASQ and ASQ:SE rely on parent participation in the assessment process, reducing the time required by professionals while also empowering parents to participate in assessment process. The ASQ:SE asks parents to report on specific behaviors a child may show to demonstrate their social and emotional repertoire such as smiling, crying, feeding, and play behaviors, all indicators of an infant's ability to elicit and receive sensitive care. The ASQ:SE-2 also provides illustrations for some items to aid a caregiver in providing

accurate information. The ASQ:SE-2 is also used as a monitoring system, allowing for quick re-testing at different intervals in order to develop an accurate picture of developmental progress over time.

The ASQ-SE-2 has demonstrated high validity and consistency in multiple studies both in the US and internationally (Bian, Xie, Squires, & Chen, 2017; Squires, Bricker, & Twombly, 2002). In the development of the ASQ:SE-2, researchers collected data from 2009 to 2011 with a sample of 14,074 children ages 1 to 72 months in order to examine the psychometric properties of the ASQ:SE-2. Data demonstrated that the ASQ:SE-2 has high internal consistency (.71 to .90 with overall Alpha of .84), test-retest reliability (.89), and sensitivity (.81 overall) (Squires, Bricker, Waddell, Funk, Clifford, & Hoselton, 2014). Results also supported the ability of ASQ:SE-2 to discriminate between children with social-emotional delays and those who appear to be developing typically in social-emotional areas using the CBCL, the Devereaux Early Childhood Assessment-Infant Toddler (DECA-IT), and the ITSEA along with professional diagnosis of social-emotional disability to establish convergent validity with percent agreement ranging between 77.0% (at 18 months) and 89.1% (at 60 months) with overall agreement of 83%. Findings demonstrate consistently that the ASQ:SE-2 is able to distinguish between children who need follow-up and those who do not (Squires, Bricker, Twombly, Murphy, Hoselton, Dolata, & Chen, 2015). Finally, a systematic review of 18 studies examining the psychometric properties of the ASQ and ASQ:SE conducted in 2017 also concluded that the ASQ:SE original form had mostly positive findings from psychometric studies conducted around the world (Velikonja, Edbrooke-Childs, Calderon, Sleed, Brown, & Deighton, 2017).

SEAM. The Social and Emotional Assessment (SEAM), a complement of the ASQ:SE, is a longer-form parent-report functional curriculum-based assessment (CBA) tool for assessing and monitoring social and emotional development in in infants, toddlers, and preschoolers at three intervals: Infant (2-18 months), Toddler (18-36 months), and Preschool (36-66 months). The SEAM can be used to obtain in-depth information about both a child and caregiver's social and emotional skills, strengths, and areas of need (Squires, Bricker, Waddell, Funk, Clifford, & Hoselton, 2014). The SEAM CBA system includes the SEAM Family Profile, a parent-report questionnaire examining a caregiver's skills and competencies around providing regulatory support to their infant, toddler, and preschooler. The SEAM can be used to develop goals and objectives based on identified competencies and needs and can be used as a monitoring tool through re-testing. A psychometric study found evidence for the reliability, concurrent and content validity of the developmental structure, and social validity of the SEAM (Sjoe, Blese, Dybdal, Nielsen, Sehested, Kirkeby, Kreiner, & Jensen, 2017; Squires, Waddell, Clifford, Funk, Hoselton, & Chen, 2013). The SEAM assesses ten benchmarks with items for each benchmark. Items assess behaviors and skills that correlate with benchmark areas such as participating in healthy interactions, expressing a range of emotions, regulating social-emotional responses, and displaying empathy. The SEAM Family Profile assesses four benchmarks with multiple items in each benchmark in the following areas: responding to child's needs, providing activities and/or playing with child, providing predictable routines and appropriate environments, and providing a safe home (Squires, Bricker, Waddell, Funk, Clifford, & Hoselton, 2014).

The SEAM was developed as a full assessment with the purpose of helping providers identify appropriate goals for intervention. A 2013 study combining item response theory and classical test theory analyses to establish psychometric properties for the SEAM found positive results (Squires, Waddell, Clifford, Funk, Hoselton, & Chen, 2013). In particular, strong and significant correlations were reported between the SEAM and other standardized measures including the ITSEA (Compliance Domain Infant, r = .628, Toddler r = .564; Prosocial Domain Infant, r = .651, Toddler r = .652), and the DECA-IT (r = .754). As predicted, the ASQ:SE was negatively correlated with the SEAM, as higher scores indicate developmental progress on the SEAM but increasing problem behaviors on the ASQ:SE (Infant r = -.557, Toddler r = -.516). The SEAM also demonstrated high internal consistency with standardized alpha of .90 for Infant SEAM and .91 for the Toddler SEAM. The study also reported strong test-retest reliability but mixed results for interrater reliability among teachers. Item response theory also indicated that model fit statistics were consistent for ability, item characteristics, age, and item difficulty, confirming the validity of the developmental structure of the SEAM. Finally, this study explored the utility of the SEAM with positive feedback regarding the appropriateness of questions and the length of the SEAM (Squires, Waddell, Clifford, Funk, Hoselton, & Chen, 2013). Overall, the SEAM demonstrates sound psychometric properties as well as acceptability among users.

BITSEA. Another tool that has demonstrated the ability to sensitively and accurate detect early risk for social and emotional problems is the BITSEA. Similar to the ASQ:SE, The BITSEA is a brief parent-report social-emotional screener used to identify concerns in children ages one- to three-years-old with cut-off scores placing children in

within categories of "clinical" and "of concern" (Briggs-Gowan & Carter, 2006). The BITSEA has demonstrated validity with respect to the detection of common internalizing and externalizing "problem behaviors" that might be detected by a universally accepted tool like the Child Behavior Checklist (CBCL) (Briggs-Gowan, Carter, Irwin, Wachtel, & Cicchetti, 2004), as well as convergent validity with the more extensive Preschool Age Psychiatric Assessment (PAPA) (Achenbach & Rescorla, 2000), indicating that the BITSEA has potential to identify more serious concerns within the infant and toddler population (Briggs-Gowan, Carter, McCarthy, Augustyn, Caronna, & Clark, 2013).

Child Behavior Checklist (CBCL). The Child Behavior Checklist is a widely used tool developed originally as the Achenbach System of Empirically Based Assessment. The CBCL asks parents to report on 99 items related to problem behaviors in addition to questions to elicit concern areas, disabilities, and strengths relevant to the child (Achenbach & Rescorla, 2000). The CBCL can be used with children ages 1.5 to 5 years of age and is often accompanied by a Caregiver-Teacher Report Form (C-TRF) so that secondary caregivers can provide information.

The CBCL has been validated in 24 societies and demonstrates sound psychometric validity across multiple studies (Achenbach & Rescorla, 2000 Ivanova et. al, 2010). In a sample of 68 young children, test-retest reliability was high (mean $r = .85$). Researchers also found high correlations between referred status and CBCL scores. Using regression analysis, Achenbach and Rescola (2000) found that referred status accounted for 3 to 25% of the variance on CBCL scores, with 16 medium-sized effects out of 29 scales. Referred children obtained higher scores on all but two items, indicating that the CBCL is able to distinguish between children who need services and those who do not.

Beyond the developers' research, the CBCL has been extensively disseminated and evaluated and found to be a valid and useful tool for detecting social, emotional, and behavior problems in 23 societies (Ivanova et al., 2010).

Parenting Stress Index (PSI). Stress related to parenting is an important concept to consider in relationship to behavioral and emotional difficulties experienced by young children. Parenting stress can directly impact child behavior, and vice versa (Gourley, Wind, Henninger, & Chinitz, 2012; Neece, Green, & Baker, 2012). Thus, parenting stress is a construct that is theoretically related to parental sensitivity, and assessing parenting stress may help shed light on issues related to the development of the parent-child relationship (Barroso, Hungerford, Garcia, Graziano, & Bagner, 2016). The Parenting Stress Index Short Form (PSI-SF) is a reliable and valid parent-report tool used widely to examine parent, child, and relational factors that contribute to parenting stress (Abidin, 1997, 2012; Barroso, Hungerford, Garcia, Graziano, & Bagner, 2016; Haskett, Ahern, Ward, & Allaire, 2006). The PSI-SF contains 36 items and was developed from the longer version of the PSI using exploratory factor analyses (Reitman, Currier, & Stickle, 2002). The PSI-SF has three subscales: parental distress (PD), difficult child (DC), and parent-child dysfunctional interactions (PCDI). The subscales are totaled into a Total Stress Scale, and scores above the 85th percentile are considered to be concerning (Abidin, 2012). The PSI-SF gathers information about sources of stress with respect to both parent and child characteristics, providing a view of the child as embedded within their relational environment.

Several studies have assessed psychometric properties of the PSI-SF. Abidin (1995) found the PSI-F to have strong test-retest reliability ranging from 0.68 to 0.85 in a

sample of 270, as well as strong internal consistency ranging from 0.80 to 0.91 in a sample of 800 (Abidin, 1995). Roggman, Moe, Hart, and Forthun (1994) reported reliability ranging from 0.78 to 0.90 in a sample of 103 parents. Concurrent validity was established through correlation research using the long-form PSI-SF with correlations ranging from 0.73 to 0.95 with subscales as well as the total stress score (Abidin, 1995). Follow-up studies collected new normative data from a sample of 534 mothers and 522 fathers stratified to match the demographic composition of the 2007 U.S. Census (Abidin, 2012). Assessment of internal consistency revealed strong correlations for the Child Domain (.78 to .88), the Parent Domain (.75 to .87), and the Total Stress Score (.96 or greater). Test-retest reliability scores were moderately correlated (.55 to .82 for Child Domain, .69 to .91 for Parent Domain, and .65 to .96 for Total Stress Score). Validity has been examined in several studies across a variety of contexts including maltreatment, substance abuse, and parental depression. Studies that have examined validity in samples including infants and toddlers have found evidence for strong correlation between PSI-SF scores and valid measures of child behavior problems, parenting practices, emotional responsiveness, maternal depression, and high external locus of control on child's behavior (Haskett et al., 2006; Hassall, Rose, & McDonald, 2005; Whiteside-Mansell et al., 2007).

In sum, evidence supports standardized parent-report tools as an accurate and efficient way to gain important information. In the following section, observational tools, which may provide a more detailed view of current behavioral capacities of a dyad, will be explored.

Observational Assessment Tools

There is some evidence that the "gold standard" practice for social and emotional assessment is to combine observation with parent report. This allows providers to assess both representations of the infant as well as behavioral manifestations of these representations, as well as to confirm the accuracy of parental perceptions of a child's capacities (Carter et al., 2009). Miron, Lewis, and Zeanah (2009) identified core features to the valid use of observational methods to gain an understanding of a child's social and emotional development, as described in Table 2.

Table 2

Features of Observational Assessment

1. Procedures and setting of assessment should be standardized.
2. Assessment should include both structured and unstructured activities
3. Assessment should be as efficient as possible.
4. Assessment should be adapted to meet cultural and developmental needs of dyad.
5. Observations should be easily interpretable, i.e. have a coding system.
6. Use videotaping for review when possible.

Using a standardized, efficient, and easily interpretable observational assessment methods allows for more accurate inferences to be made about the relationship developing between a caregiver and child by controlling other sources of variability (e.g. setting, materials, order of activities). Providing both structure and unstructured activities allows for a balance between both constrained and unconstrained caregiver behavior and child, aiding observers to obtain information about how the dyad handles the important "work" of free play, as well as the opportunity to observe specific elicited behaviors of

importance during more structured activities (Miron, Zeanah, & Lewis, 2009). Lastly, recorded observations allow observers to gain in-depth insight into the dyad after the assessment and can also be used as an intervention tool to reflect with parents about what is going well and what could improve (Booth & Jernberg, 2010).

Two examples of observational assessment techniques used with young children are the Crowell and the MIM.

The Crowell. The Crowell is one observational technique among several (see Miron, Lewis, & Zeanah, 2009) that meets standards recommended by Miron, Lewis, and Zeanah (2009) (Crowell & Feldman, 1988). The Crowell assesses caregivers and children ages 12-60 months. In the Crowell, clinicians observe parent and child as they work through a series of 6 tasks including free play, clean-up, bubbles, teaching tasks, separation, and reunion. Videotapes of the interactions are coded and assessed through standardized ratings that quantify aspects of the relationship such as reciprocal emotions, protection and safety, comfort seeking, response to boundaries, play, and regulation of the child (Gleason & Zeanah, 2010). The tool is also used for clinical treatment planning, and although a research coding system exists, limited information about validity of the Crowell is available, as is the case with many observational procedures (Miron, Lewis & Zeanah, 2009).

The MIM. Another example of an observational technique that meets standards of the field is the Marschak Interaction Method (MIM) (Marschak, 1960). Marianne Marschak first created the Controlled Interaction Schedule (CIS) in 1958, which was then later adapted to use in conjunction with Theraplay intervention as the Marschak Interaction Method (Booth & Jernberg, 2010). Theraplay is a therapy modality used with

caregivers and their children to provide experiences of shared joy based on four dimensions: structure, nurture, challenge, and engagement. In order to plan effective treatment focused on the four dimensions of attachment targeted in Theraplay, the MIM was adapted to assess a dyad's needs at the beginning of therapy with reference to a caregiver's capacity to provide structure, nurture, engagement, and challenge. Following are brief descriptions of each dimension assessed in the MIM as described by Theraplay founders Booth and Jernberg (2010):

Structure. The caregiver's capacity to provide consistent, predictable safety, organization, and regulation. Tasks focusing on structure are intended to shed light on the caregiver's ability to organize interactions and to provide regulation and a sense of security to the child. These tasks also provide information about child's ability to accept the parent's structure.

Example of behavior with rating of 1. Parent positions child uncomfortably or roughly.

Example of behavior with rating of 5. Parent "invents" a game to keep child interested or "on track."

Engagement. The caregiver's capacity to provide attuned, playful experiences that create connection, shared joy, and optimal levels of arousal. Tasks focusing on engagement are designed to assess the caregiver's ability to attune to the child's level of development and emotional state, and to provide experiences of shared joy to match levels of arousal. They also demonstrate the child's ability to engage in interactions with the caregiver. In other words, does interaction lead to stable levels of regulation in the child?

Example of behavior with rating of 1. Caregiver has flat, still face throughout activities. Caregiver speaks very little to child.

Example of behavior with rating of 5. Parent and child share joint attention, examining some element of the activities together. Parent mirrors child's behavior or expressions.

Nurture. The caregiver's capacity to respond with empathy to child's attachment and regulatory needs through warm, tender, calming, and comforting interactions. Tasks focusing on nurture are designed to assess the caregiver's ability to respond to the child's need for care according to the situation and the child's level of development. They also demonstrate the child's ability to accept the caregiver's nurture and to seek safety and comfort from the caregiver.

Example of behavior with rating of 1. Intrusive poking or uncomfortable touching during nurture activities.

Example of behavior with rating of 5. Parent makes eye contact with child during nurture activities. Caregivers uses hands gently and softly.

Challenge. The caregiver's capacity to provide a secure base while encouraging a child to "strive a bit," to take risks, to explore, and to enjoy their own mastery and competence. Tasks focusing on challenge are designed to assess the caregiver's ability to stimulate the child's development, to set developmentally appropriate expectations, and to respond positively to a child's developmental accomplishments. They also demonstrate the child's ability to accept challenge from his or her caregiver.

Example of behavior with rating of 1. Parent skips challenging tasks altogether.

Example of behavior with rating of 5. Parent adjusts tasks into a task that child enjoys and can accomplish with some trying.

The MIM has been used extensively in a qualitative manner by practitioners to assess these four dimensions in dyads and has potential relevance to fields such as IMH and EI/ECSE, especially as play-based treatment modalities are extended into group and educational settings (Tucker, Schieffer, Wills, Hull, & Murphy, 2017). Similar to the Crowell, the MIM employs a combination of structured and unstructured activities to gain insight into the emotional quality of caregiver-child relationships. In the MIM, a series of tasks are worked through at the pace of the dyad. Examples of tasks include the caregiver playing a short game with a child (adapted for age and development) or the parent feeding the child a small snack. The MIM is designed to give a picture of both the strengths and needs within the caregiver-child relationship for the purpose of clinical treatment planning. The MIM is theoretically rooted in attachment theory and conceptualizes the parent-child relationship through the lens of previously described dimensions of structure, nurture, challenge, and engagement.

Several behavioral coding systems have been developed to establish the validity of the MIM in the United States and abroad. The Marschak Interaction Method Rating System (MIMRS) and the Dyadic Emotional Interaction Style (D-EIS) are two coding systems that have demonstrated evidence for the validity of the MIM to identify problematic dynamics in parent-child relationships (O'Connor, Ammen, Backman, & Hitchcock, 2008; Salo & Mäkelä, 2018). For this study, the MIM will be employed using the D-EIS, a coding system developed and validated in Finland. As mentioned, the MIM uses observation to quantify dimensions of parent-child relationship using four

dimensions: structure, engagement, nurture, and challenge. However, based on previous psychometric research, the developers of the D-EIS collapsed structure and challenge into one category called Parental Guidance, in addition to the original dimensions of engagement (emotional reciprocity and initiative) and nurture. The D-EIS added the category of playfulness, in which a caregiver's general state of mind during play (as opposed to skills performing play activities) is assessed, including the use of humour, "lightening up," and the ability to create joyful moments without a "too serious" attitude. Finally, the D-EIS also codes the representation of the child, or whether or not the parent communicates positively about the child during a task that requires parents to tell about when the child was a baby. This dimension is coded according to the parent's capacity to 1) recall something positive about baby and 2) tell the child about it. The D-EIS is scored with a continuous scale of 1 to 5. Each dimension is scored separately using whole or half-points (See Appendix A). A score of 5 or 4 indicates healthy or "good enough" interaction between the parent and child. In order to receive a score of 5 for a dimension, the interaction does not need to be completely free of "error but rather is differentiated from a 4 by especially positive interactions between caregiver and child. A score of 3 indicates a growing area of concern and may be viewed as a "cutoff" score. A score of 2 indicates a clear problem within the dimension. A score of 1 indicates serious concern and indicates that the potential for intervention needs to be carefully assessed, as there may be significant risks in the relationship.

To date, the D-EIS has not been used to validate features of the MIM in the United States. However, researchers have conducted multiple projects using independent samples to validate the D-EIS in Finland, each of which established preliminary evidence

for convergent validity of the MIM with respect to related variables such as emotional availability, attachment, child behavior, and parenting styles (Salo & Mäkelä, 2018; Salo & Mäkelä, 2006; Salo, Flykt, & Biringen, 2016). For example, D-EIS scales were consistently correlated with Emotional Availability (EA) Scale scores, a conceptually similar and well-validated observational method (Biringen, 2008). Both in a sample of 20 preschool-to-school-aged child psychiatric outpatients, as well as in a sample of 33 1-year-old infants (Salo et al., 2016; Salo & Mäkelä, 2018), Parental Guidance was strongly associated with EA Structuring, and Parental Engagement was strongly associated with EA Sensitivity. In addition, the child variables coded with the D-EIS were strongly associated with related EA child variables. Salo and Mäkelä (2006) examined three groups with varying levels of mental health problems with respect to the D-EIS. As predicted, the highest risk-group (a child psychiatric sample) demonstrated the lowest level of D-EIS means. Furthermore, lower interaction scores on Parent Engagement in the same high-risk sample were associated with increased child psychiatric symptoms (Salo & Mäkelä, 2018). With respect to parenting variables, higher Parent Guidance, Engagement, and Playfulness were related to higher Parental Reflective Functioning. Guidance, Engagement, and Nurture were associated with Parenting Stress Indices (Salo et al., 2016). In the initial validation study of the D-EIS, interrater reliability was found to be high (.81 to .90) (Salo & Mäkelä, 2006), and results of this study led to the collapse of Structure and Challenge scales into one scale to improve the internal consistency of the scales. Overall, the D-EIS shows promise as a more fine-grained observational tool to be used to determine areas of strength and need in the developing relationship between caregiver and child. More validation work is needed in the United States in order to

establish the tool's relevance to fields such as Infant Mental Health and Early Intervention.

Overall, although observational measurement may be more expensive and less efficient than standardized parent report measures, it may be an important complement for planning effective intervention in addition to serving as an intervention in and of itself (Miron, Lewis, & Zeanah, 2009). Given Facompré et al.'s (2018) meta-analytic findings regarding attachment and sensitivity, video feedback appears to be an effective tool in the field of IMH and observational procedures such as the MIM and Crowell, which are almost always videotaped, may provide both useful assessment information as well as a reflective tool for further intervention.

Establishing Criterion Validity

It is important to use tools that can provide a valid picture of a child's development, and in the case of young children, tools should also provide a valid picture of the child's relationship with caregivers (Zeanah & Zeanah, 2009). Thus, psychometric properties of social and emotional assessment are important indicators of the validity of using a certain tool with dyads. In the following section, the procedure for establishing the concurrent and social validity of a tool will be reviewed. As mentioned in the introduction, this study seeks to explore the validity of the MIM/D-EIS in reference to other well-established "anchor" tools in the field. By utilizing "gold standard" tools, valid inferences about the utility and validity of the MIM/D-EIS can be established.

The validation of a tool always involves "a continual interplay of data and theory," in which predictions based on strong theoretical assumptions are supported through the correlation of collected observational or reported data with other tools of

measurement (Messick, 1995). In this study, criterion-related validity, which includes convergent validity, is the primary concern. Criterion-related validity is the correlation between a particular measure (in the case of this study, a Total D-EIS/MIM score, as well as five dimensional scores) and an external criterion (often a "gold standard" tool; in this case, the ASQ:SE and the CBCL) that measures a similar construct of interest (Achenbach & Rescola, 2000). The measurement(s) of comparison should be widely accepted, that is, have established criterion, and measure similar constructs to the instrument of interest (de Souza, Alexandre, & Guirardello, 2017). If the measure of interest is highly correlated with similar constructs in the chosen criterion, criterion validity can be established. Convergent validity measures a criterion at the same time as a targeted measure. Correlation coefficients can be used to establish criterion validity. The higher the correlation between related measured constructs, the more robust the convergent validity of the target measure is thought to be.

Establishing Social Validity

Social validity is also of particular importance when it comes to the relational assessment of young children and their caregivers. The concept of social validity includes participants' perceptions of the acceptability of an assessment or intervention, as well as their satisfaction with the process and procedures (Kennedy, 2002). Often, there is stigma attached to families who may have social and emotional needs. Parents often express concern that a child's social and emotional delays may be "their fault" or may be an indication that they are "bad parents." Indeed, most parents feel that their children are extensions of themselves; what is already a vulnerable time in life (i.e. infancy, parenthood) can easily cause a parent to experience shame, guilt, and self-doubt when

liabilities are identified in a family's relational life (Zeanah & Zeanah, 2009). In addition, parents who may be familiar with the CW system may have fears related to losing child custody if the "results" of assessment are "bad" (Gleason & Zeanah, 2010). Finally, apart from issues of guilt and fear, it is natural, especially in early childhood, for parents to worry about "ruining" their children. Certainly, assessing a relationship may bring up or even deepen these worries if certain cares are not taken with caregivers. Therefore, the current study employs qualitative methods to assess the social validity of the study tools in order to assess a parent's qualitative experience of the assessment process in early childhood.

Summary

As established by several analyses that build upon one another, researchers in the field of early social and emotional assessment have provided compelling empirical evidence that early interventions targeting parental sensitivity and parent-child relationships have the potential to make a large impact on at-risk families (Bakersman-Kranenburg et al., 2005; Facompré et al., 2018; Raby et al., 2015). The same body of research has also established the usefulness of assessment techniques that are strength-based and that identify specific behavioral targets that are amenable to change (Miron, Lewis, & Zeanah, 2009). Finally, the use of video-based assessment and intervention has been widely evaluated and found to be an effective tool in relationship-based intervention. However, the opportunity to combine standardized assessment with intervention through the use of video has yet to be fully capitalized upon across fields serving families and young children. Thus, there is a need to establish the validity and utility of observational coding systems to further enhance intervention efforts targeting

dyads with social and emotional risk. This study seeks to address this need by establishing the validity and utility of a new coding system, the D-EIS, related to the MIM. The MIM, while primarily used until now with the specific intervention Theraplay, may have broader applications across fields seeking to enhance parental sensitivity through behavioral interventions. By providing an in-depth view of a dyad using relatively few materials and a simple coding process, there may be opportunity to identify specific, modifiable areas of need while also reinforcing positive moments in a dyad's relationship. As emphasized by Miron, Lewis, and Zeanah (2009), this may be an important complement to the information already regularly obtained through standardized parent-report tools and may lead to more effective relationship-based intervention.

Overall, fields serving young children with social and emotional needs would benefit from more research regarding identification and treatment planning when there are delays. The current study examined the validity of using the MIM/D-EIS using a set of related standardized assessments commonly used in the United States. For this study, the MIM was administered to a sample of caregiver-child dyads experiencing a wide range of stress levels. Evidence from this study may help to determine to what extent the MIM is a valid indicator that a caregiver-child dyad may benefit from intervention.

CHAPTER III

METHODS

Research Questions

The theoretical background for the MIM is rooted in attachment theory, which posits that secure attachment as represented by sensitive and responsive parenting behaviors between a caregiver and child is a foundational aspect of early development. Thus, the MIM and the corresponding D-ESI coding system seeks to establish the degree to which a dyad displays five indicators of the quality of attachment relationships: engagement, guidance (challenge and structure), playfulness, nurture, and representation. This study sought to validate the MIM's conceptualization of attachment and sensitivity by comparing D-EIS-coded MIMs with gold standard "anchor" tools. The following questions were investigated:

RQ 1. To what extent is there convergence between the MIM parent-child interaction style as determined by the Emotional Interaction Style (EIS) coding system and convergent measures including the ASQ:SE/CBCL//PSI-SF/SEAM? The researcher hypothesized the following relationships between scales:

- Moderate negative correlation between Parental Guidance and PSI-SF PCDI Scale
- Moderate negative correlation between Engagement and PSI-SF PD Scale
- Moderate negative correlation between D-EIS Nurture and PSI-SF PCDI scale
- Moderate positive correlation between D-EIS Playfulness and SEAM

- High negative correlation between D-EIS Representation and PSI-SF Difficult Child (DC) scale
- High positive correlation between overall SEAM scores and overall D-EIS scores
- High negative correlation between all child D-EIS scores and CBCL Total Score
- High negative correlation between ASQ:SE and all D-EIS scales

RQ 2. To what extent is there convergence between MIM parent-child interaction style and EI/ECSE/IMH eligibility, and social and emotional development? The researcher hypothesized that EI/ECSE services would not be associated with D-EIS scores, but D-EIS scores would be associated with levels of social and emotional risk.

RQ 3. What are parents' perceptions of the acceptability of the MIM compared with similar convergent measures including the SEAM and SEAM FP? The researcher did not form a hypothesis regarding this research question.

Subjects

Fifty parents and their 18-to-42-month-olds were recruited to participate in the study. Potential participants were screened for study eligibility during visits for services at Pearl Buck Preschool, Early Childhood Cares, First Place Family Center, and Willamette Family Treatment Center. Participants were also recruited from the general public through fliers and word of mouth.

Children recruited directly from sites had been referred for evaluation or were receiving services due to developmental concerns and/or environmental risks such as

poverty and homelessness. At all locations, on-site rooms and scheduling support for assessments were provided, and parents were also be offered the option of an in-home visit to complete study assessments. Accommodations were provided to parents who needed assistance with completing assessments in the form of reading assessments aloud to parents. In particularly high-stress environments, such as the family homeless shelter, parents were given the option to complete "high priority" assessment materials first in the event that the assessments were overwhelming for the family. Eligibility for the study included the following criteria: age 18 months to 3.5 years at time of recruitment, and primary caregiver is legal guardian of child. Exclusion criteria included any parents who do not currently have legal custody of their child. Staff of all sites assisted with recruitment, following IRB protocol and referring potential participants to principal investigator (PI). The PI received referrals from each site per IRB protocol in addition to visiting sites to speak with families. Each participant family participated in one appointment lasting approximately 60-120 minutes in which, after providing informed consent, they completed a set of screening tools, assessments, and questionnaires (Table 3).

Procedures

For the current study, the PI received extensive training from the Theraplay Institute and the developers of the D-EIS coding system to properly conduct and code MIM interactions. The PI received feedback and training for coding methods until interrater agreement between the PI and the developer of the D-EIS exceeded 90%. The developer and PI also coded 5 MIMs from the current study and reached an interrater agreement that exceeded 90%.

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Table 3

Study Activities

Instrument	*Time*	*Type of Instrument*
ASQ:SE-2	10	Caregiver-completed screener
Demographic Questionnaire	10	General information
CBCL	10	Caregiver-completed checklist
PSI-SF	10	Caregiver-completed questionnaire
MIM	20	Video-taped observation sequence
ASQ	10	Caregiver-completed screener
SEAM/SEAM Family Profile	10	Caregiver-completed assessment
Exit Ratings	10	Short questionnaire

For the MIM, per standardized procedures, the caregiver and child were seated together at a table or on the floor, and nine numbered envelopes with task cards and materials were provided in a box next to the child and his or her caregiver. Simple, clear instructions were provided on a card for each task, and the caregiver was asked to read the card and work through the task with their child one task at a time at their own pace. The PI waited nearby or outside the door should they need any assistance. Each session lasted between 60 and 120 minutes. The activities used in the MIM are outlined in Table 4.

The principal investigator used the D-EIS coding system to code 100% of the MIM videos. After completing all assessments and screeners, participants were offered the opportunity to receive a follow-up phone call with recommendations and referral for appropriate social and emotional services if needed.

Table 4

The MIM Activities

Activity	Instructions for Activity	Dimension Investigated
1	Adult and child each take one squeaky animal each. Make the two animals play together.	Engagement, Parental Guidance
2	Adult builds block structure. Then says to child, "Build one just like it with your blocks." (3-8 blocks are used, depending on child's age.	Parental Guidance
3	Adult and child apply lotion on each other's hands/arms/face.	Nurture
4	Adult tells child about when child was a baby, beginning, "When you were a little baby."	Nurture, Parental Guidance, Representation
5	Adult teaches the child something child doesn't know.	Parental Guidance
6	Adult leaves the room for one minute without child.	Parental Guidance
7	Adult and child play a familiar game.	Engagement, Parental Guidance
8	Adult and child put hats on each other.	Engagement, Parental Guidance
9	Adult and child feed each other (small snacks are provided).	Nurture, Engagement, Parental Guidance

Psychometric Properties and Measures

Correlations above .70 are considered desirable when establishing the validity of a tool (de Souza, Alexandre, & Guirardello, 2017). Thus, for the current study, validated tools related to constructs relevant to the MIM/D-EIS were selected in order to provide

further evidence of convergent validity in a United States sample. The following measures/questionnaires/interviews were administered to all participants:

Standardized Measures

ASQ:SE-2. The ASQ:SE is a parent-completed screening tool focused on social and emotional development in young children. Validity, reliability, and utility studies were conducted on ASQ:SE-2 between 2009 and 2011 to accurately determine the psychometric properties of the screening instrument. Normative studies included 14,074 children, ages 1 month up to 72 months. Results support the ability of ASQ:SE-2 to discriminate between children with social-emotional delays and those who appear to be developing typically in social emotional areas (Squires, Bricker & Twombly, 2009).

Child Behavior Checklist (CBCL). CBCL is a well-validated standardized checklist used widely with diverse populations around the world. The checklist contains approximately 100 items targeting common problem behaviors in children and is completed by parents and/or teachers. CBCL has consistently demonstrated strong evidence for being psychometrically sound (Achenbach & Rescola, 2000; Whitcomb & Merrell, 2013).

Parenting Stress Index-Short Form (PSI-SF). The PSI-SF is a 36-item self-report questionnaire examining parenting stress using three subscales (PD, PCDI, and DC) and a Total Stress Score. Scoring above the 85th percentile indicates borderline clinical significance (Abidin, 2012).

Social-Emotional Assessment/Evaluation Measure (SEAM): The SEAM is a parent-completed comprehensive assessment to help professionals plan intervention after child falls above cut-off on screeners such as ASQ:SE-2. The SEAM assessment provides

detailed information on children's social-emotional competence at each interval (infant, toddler, preschooler) and has established reliability and validity (Squires, Waddell, Clifford, Funk, Hoselton, & Chen, 2013). The SEAM Family Profile is a parent-completed companion to the SEAM that assesses parent and caregiver strengths and helps identify areas in which they need more supports and resources to foster their child's social-emotional skills.

Ages and Stages Questionnaire. The ASQ is a parent-completed screener examining overall development in early childhood. The ASQ is a widely used tool with sound psychometric properties. The tool asks parents to respond to items about developmental skills across five developmental domains (communication, gross motor, fine motor, problem solving, and personal-social) (Squires & Bricker, 2018).

Observational Measure

Marschak Interaction Method (MIM/D-EIS). The MIM involves the caregiver and child working through a series of nine age-appropriate interactive tasks (example: "build a tower with blocks together" or "teach your child something new") while being videotaped. Tasks are divided among four categories: structure, nurture, challenge, engagement. The MIM is not standardized in the United States, but scoring systems with established validity and reliability have been developed by Ammens and O'Connor in the United States, Salo et al. in Finland, and Ritterfled in Germany (Salo & Mäkelä 2018). For this study, the D-EIS developed by Salo and Mäkelä were used.

Qualitative Measures

Caregiver questionnaire. The questionnaire asked about basic child and family demographic information, including socioeconomic status, parental education, age, and disability status (see Appendix B).

Qualitative exit interview for social validity. Short qualitative exit interview was offered to each participant. Each participant was asked a short series of questions about assessment experience:

- What was it like to complete the MIM with your child?
- What was it like to complete the SEAM/SEAM Family Profile?
- Was there anything that you particularly liked about this experience?
- Was there anything that bothered you about this experience?

Data Analysis

Descriptive statistics were computed for all study variables and group mean differences according to demographic characteristics were analyzed for statistical significance using analysis of variance. Bivariate and unique associations were investigated using Pearson correlations and simple regression analyses, respectively. A Receiver Operating Curve (ROC) was plotted in order to examine the specificity and sensitivity of the D-EIS coding system. By plotting a test's specificity (or false positive rate) against its sensitivity, a ROC curve can provide evidence of the "sorting" power of a measure. The ROC curve is particularly useful when one desires to understand the ability of a test to separate individuals into two groups; in this case, to distinguish between at-risk parent-child dyads and low-risk parent-child dyads. The closer the area under the curve (AUC) is to 1, the more the test is able to distinguish between two classes. An

exploratory canonical correlation analysis (CCA) was then conducted using four parent dimension variables for one set and six child variables as criterion variables to evaluate the multivariate shared relationship between the two sets of variables (parent dimensions and child dimensions). Canonical correlation is a statistical analysis in which each subject is measured on two sets of variables and the researcher wants to know how the two sets relate to each other (Tabachnick & Fidell, 2007). Canonical correlation is similar in theory to multiple regression analysis, but CCA allows for several variables on both sides of the equation. Sets of variables are combined to produce, for each side, a predicted value that has the highest correlation with the predicted value on the other side. The combination of variables on each side can be thought of as a dimension that relates the variables on one side to the variables on the other (Tabachnick & Fidell, 2007). The purpose of the CCA was to determine which variables in particular contributed most to the associations between parent ratings and child ratings overall, as reflected by their loadings on the synthetic variables that explained a significant proportion of the variance shared by the two sets (Sherry & Henson, 2005; Thompson, 1991).

To address the question of social validity and user experience, the PI utilized Atlas.ti software to transcribe, summarize, and analyze qualitative feedback provided both verbally and on paper. Using a rapid review technique, which may be useful for exploratory studies examining user experiences, data was processed and reduced for simple coding (Taylor, Henshall, Kenyon, Litchfield, & Greenfield, 2018). First, the PI read through summaries and developed open codes based on patterns and themes per grounded theory qualitative methodology and assigned codes to relevant qualitative data (Corbin & Strauss, 1990; Strauss & Corbin, 1994). Then, axial codes were established

based on clusters of similar codes to describe significant themes. Thick description was extracted from interviews and used to support thematic analysis as well as to triangulate with overall satisfaction ratings obtained through Likert scale.

Summary

The goal of the current study was to utilize quantitative and qualitative research methods to establish the convergent validity as well as the social utility of the MIM for assessing various dimensions of social and emotional development in young children and their caregivers in the United States. IRB approval from the University of Oregon was obtained, and all recruitment, consent, data collection, and data analysis methods met current ethical standards. Results were planned to provide benefits to the field including knowledge of relevant and valid tools as well as further insight into the integration of observational assessment method with evidence-based intervention.

CHAPTER IV

RESULTS

Descriptive Analysis

Descriptive statistics for caregiver characteristics are displayed in Tables 5-8. Figures 1 and 2 also display caregiver characteristics. The distribution of MIM composite scores is shown in Figure 3. A total of 50 participants were recruited with their children. For two measures (CBCL and PSI-SF), 8 (16%) caregivers did not complete assessments. The mean age of children in the study was 28.82 months (*SD* = 9.21 months); 90% of participants were Caucasian, 2% Latino, Asian or African American, and 4% were Native American. Forty-six percent of participants reported less than $25,000 per year of income and 26% did not finish a high school diploma. Sixteen percent had a high school diploma or equivalent; 26% had received some college; 18% an associate's or bachelor's degree; and 14% a master's or doctoral degree.

Overall, the sample represented a high-stress population, with 20% of children experiencing in utero exposure to drugs, 8% currently experiencing homelessness, and 15% having either an autism diagnosis or other diagnosis (e.g. genetic disorder, spina bifida, or global developmental delay) with no overlap between these three groups. Thirty percent of participant families were receiving services per an Individualized Family Service Plan (IFSP); however, no participants reported receiving mental health services such as psychotherapy, parenting support, interaction therapy or infant mental health services. In terms of developmental risk, 26% of participants were classified as at-risk on the ASQ:SE overall as well as the ASQ communication domain, and 16% were classified at-risk on the personal-social domain of the ASQ. Ten percent of CBCL scores were

above cut-off and 8% of parents scored above cut-off for Total Stress on the PSI-SF. For the PSI-SF, 20% of parents tested positive for defensive scoring; therefore, PSI-SF associations must be treated with caution. Fifty percent of participants scored ≤3.0 for the MIM/D-EIS; scores of 3 or less are considered an indicator for referral to intervention.

Table 5

Ethnicity of Participant Caregivers

Ethnicity	*n*	*Percent*
Hispanic or Latino	1	2.0
Asian	1	2.0
African American	1	2.0
Caucasian	45	90.0
Native American	2	4.0

Table 6

Percentage of Participants with Disability or Stress Exposure

Variable	*n*	*Percent*
Autism Diagnosis	4	8.0
Other Diagnosis	12	24.0
Received IFSP/IEP	15	30.0
Currently Homeless	8	16.0
In Utero Exposure	10	20.0

Note: Individualized Family Service Plan (IFSP)/Individualized Education Plan (IEP)

Table 7

Percentage of Participants Outside Cutoff Range Indicating Potential Risk

Variable	*n*	*Percent*
ASQ: Social Emotional	13	26.0
ASQ: Communication	13	26.0
ASQ: Personal Social	8	16.0
Child Behavior Checklist	5	10.0
Parenting Stress Index	4	8.0
MIM Composite < 3.0	25	50.0

Note: 20% of participants scored above cutoff for defensive responses. on the PSI-SF.

Figure 1

Caregiver Income

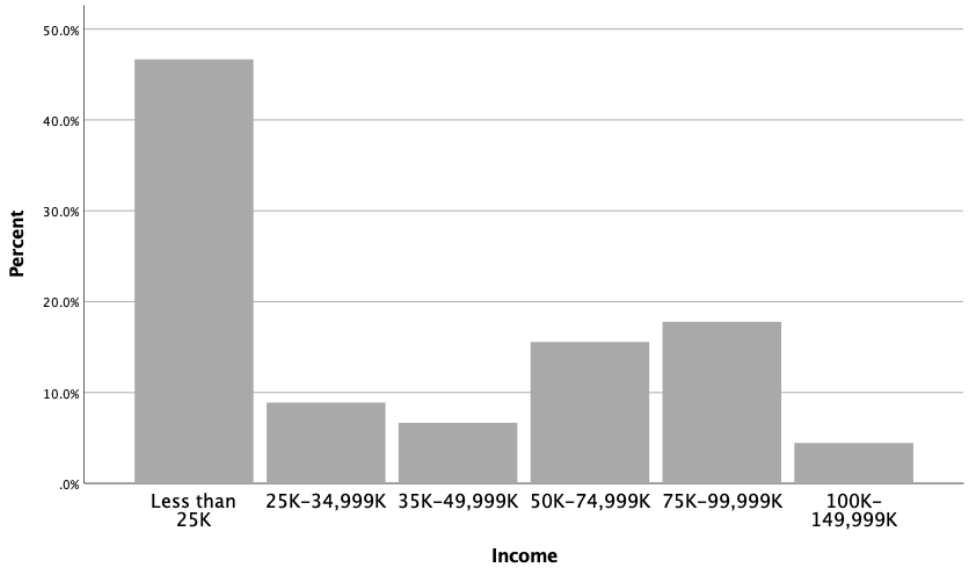


Figure 2

Caregiver Education

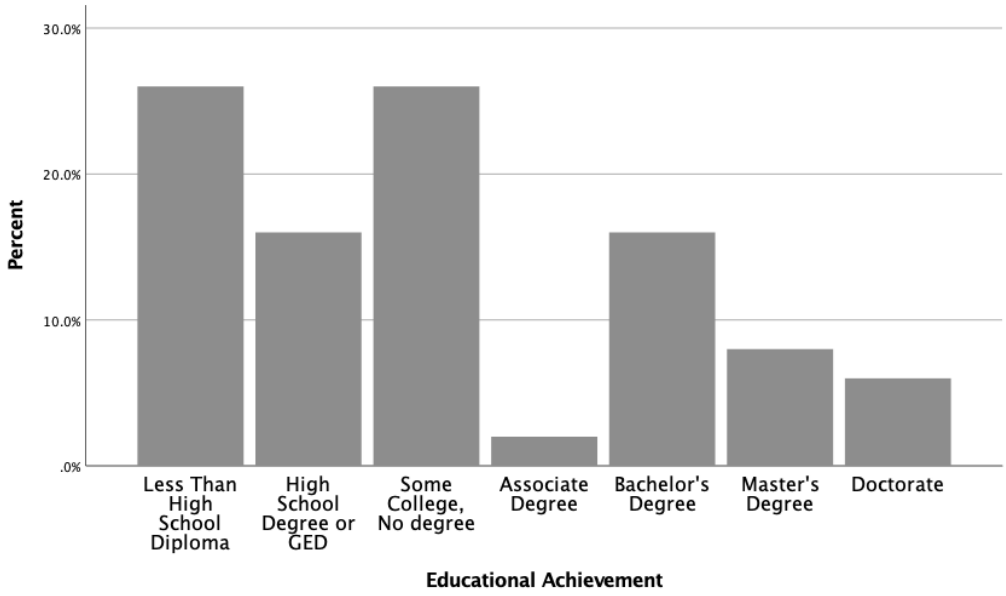


Figure 3

Distribution of Overall MIM Ratings

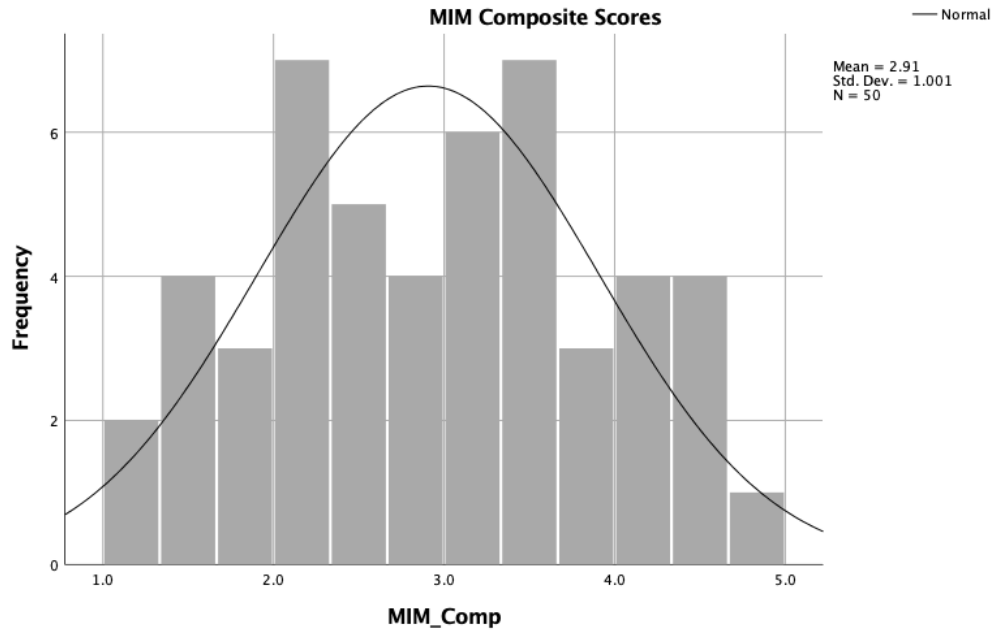


Table 8

Descriptive Statistics for MIM Dimensions

Measure	*n*	*M*	*SD*	*range*
Parent Guidance	50	3.02	1.21	1.0-5.0
Child Cooperation	50	3.10	1.17	1.0-5.0
Parent Engagement	50	3.19	1.15	1.0-5.0
Child Engagement	50	3.03	1.17	1.0-5.0
Parent Nurture	50	2.65	1.09	1.0-5.0
Child Nurture	50	2.66	1.07	1.0-5.0
Parent Playfulness	50	2.96	0.96	1.0-5.0
Child Playfulness	50	2.92	1.02	1.0-5.0
Representation	50	2.69	1.00	1.0-5.0
Composite	50	2.91	1.00	1.0-4.8

External Validation

Correlation relationships across all measures are displayed in Tables 9-11. Convergent validity was examined between PSI and MIM for relationships. As mentioned, 20% of participants were flagged for defensive responding during scoring. Across all MIM dimensions and PSI subscale and total scores, correlations were weak and not statistically significant. Table 9 displays correlations between PSI and MIM dimensions, subscales, and overall scores.

External validation was tested with the ASQ:SE, using converted percentage scores to account for increasing cutoffs across age bands. ASQ:SE scores were significantly and negatively correlated with MIM dimensions across all scales. Higher scores indicate risk on the ASQ:SE while higher scores on the MIM indicate healthy

Table 9

Pearson Correlation Matrix among MIM and PSI

	PD	*PCDI*	*DC*	*TS*
Parent Guidance	.186	.055	.231	.115
Child Cooperation	.075	.018	.258	.045
Parent Engagement	.242	.047	.254	.120
Child Engagement	.196	.023	.241	.087
Parent Nurture	.098	-.139	.023	-.095
Child Nurture	.183	-.060	.134	-.007
Parent Playfulness	-.006	-.148	.065	-.095
Child Playfulness	.156	.049	.236	.047
Representation	.128	-.253	-.015	-.087
Overall	.046	-.124	.166	-.045

Note: Parental Distress (PD), Parent-Child Dysfunctional Interaction (PCDI), Difficult Child (DC), and Total Stress (TS)

behaviors; therefore, a negative correlation provides evidence for convergence. The correlation between the composite EIS score the ASQ:SE was .521, indicating a moderate relationship.

The CBCL only revealed one significant relationship with the MIM. Parent nurture was moderately and negatively associated with CBCL scores (-.352, p <.05), meaning that an increase in problematic behaviors correlated with decreasing scores for Parent Nurture. All other correlations were weak and insignificant.

Some SEAM and SEAM Family Profile associations were significant. As hypothesized, overall SEAM scores and MIM composite scores were negatively and moderately correlated (-.307, p < .05) and overall SEAM Family Profile overall scores and MIM composite scores were negatively and moderately correlated (-.348*, p < .05).

In particular, Child Engagement and Parent Nurture were moderately associated with SEAM scores (-.332, -.321, $p < .05$), and Parent Guidance, Parent Playfulness, and Parent Representation were moderately associated with SEAM Family Profile scores (-.355, -.380, -.357, $p < .05$).

Interestingly, exploratory correlation analysis also revealed that all MIM dimensions were significantly and moderately associated with parental education (.385-.503, $p < .05$) and all MIM dimensions except Parent and Child Playfulness were significantly and moderately associated with parental education (.329-.458, $p < .05$).

Table 10

Pearson Correlation Matrix among MIM and Measures

	ASQ:SE	*CBCL*	*SEAM*	*SEAM FP*
Parent Guidance	-.457**	-.200	-.168	-.355*
Child Cooperation	-.444**	-.069	-.284	-.251
Parent Engagement	-.549**	-.189	-.294	-.303
Child Engagement	-.437**	-.118	-.332*	-.162
Parent Nurture	-.469**	-.352*	-.321*	-.310
Child Nurture	-.493**	-.225	-.296	-.235
Parent Playfulness	-.440**	-.163	-.232	-.380*
Child Playfulness	-.429**	-.045	-.218	-.207
Representation	-.413**	-.237	-.150	-.357*
Overall	-.521**	-.201	-.307*	-.348*

* *Correlation is significant at the .05 level.*

** *Correlation is significant at the .01 level.*

Table 11

Pearson Correlation Matrix among MIM and Demographic Characteristics

	Parental Education	*Parental Income*
Parent Guidance	.395**	.453**
Child Cooperation	.465**	.424**
Parent Engagement	.475**	.451**
Child Engagement	.449**	.371**
Parent Nurture	.460**	.458**
Child Nurture	.503**	.401**
Parent Playfulness	.397**	.263
Child Playfulness	.405**	.291
Representation	.385**	.329*

* *Correlation is significant at the .05 level.*

** *Correlation is significant at the .01 level.*

Discriminant Properties

T-test comparisons were computed in order to test whether composite MIM scores varied according to different groups. Due to small group sizes, this analysis remains exploratory. There were no significant findings in reference to in utero exposure or autism. However, children experiencing homelessness and children from households with low income or low parental had MIM scores that were significantly lower than the mean (Table 12). For children experiencing homelessness, the mean score was 2.175, .732 below the mean. For children from low-income households (less than 25K per year income), the mean score was 2.533, .374 below the mean. For children with parents with

low education, the mean score was 2.30, .607 below the mean. Interestingly, the mean score for children with autism (n = 4) was 3.225, higher than the overall mean.

Table 12

Mean MIM Scores by Group

Measure	*n*	*M*	*Sig.*
Experiencing Homelessness	8	2.175	.022*
In Utero Exposure	10	2.469	.123
Autism	4	3.225	.628
Low Income	27	2.533	.003**
Low Parental Education	20	2.300	.000**
Overall	50	2.907	

* *Significant at the .05 level.*

** *Significant at the .01 level.*

Intercorrelation

Intercorrelation coefficients were calculated to examine the relationships between scales (Table 13). Since all dimensions of the MIM are directionally positive (higher scores represent more positive behaviors), strong and positive relationships were expected. All dimensions were strongly correlated with the exception of representation, which was more moderately correlated with other dimensions. Since all dimensions are theoretically rooted in one coherent construct (attachment), high intercorrelation is expected.

Receiver Operating Characteristics (ROC) Curve

Three ROC curves were calculated based on three state variables: ASQ:SE screening risk, expert clinical referral opinion, and receipt of IFSP/services (see Figures

4-6). For the ASQ:SE state variable, the AUC was calculated at .785, indicating that MIM scores may provide a good test of social and emotional developmental risk. For the

Table 13

Intercorrelation Among MIM Dimensions

	PG	*CC*	*PE*	*CE*	*PN*	*CN*	*PP*	*CP*	*Rep*	*Total*
Parent Guidance										.924
Child Coop	.787									.913
Parent Engage	.906	.805								.933
Child Engage	.749	.909	.833							.883
Parent Nurture	.859	.734	.835	.707						.879
Child Nurture	.853	.845	.864	.846	.898					.934
Parent Play	.852	.754	.873	.739	.798	.830				.894
Child Play	.794	.894	.810	.845	.749	.868	.832			.898
Representation	.695	.527	.667	.575	.695	.734	.629	.552		.728

Note. All correlations are significant at $p < .001$

clinical expert opinion variable, the PI, an infant mental health therapist and expert, determined mental health referral needs for each participant based on notes, interactions, and contextual variables. The AUC was calculated at .939, indicating that the MIM may provide an excellent indicator of whether or not infant mental health services are needed

in a case. Finally, for the IFSP state variable, AUC was calculated at .501, indicating that the MIM is not a satisfactory test to predict disability or receipt of services for disability or delay.

Figure 4

Receiver Operating Characteristics: ASQSE State Variable (.785) Sig. .001

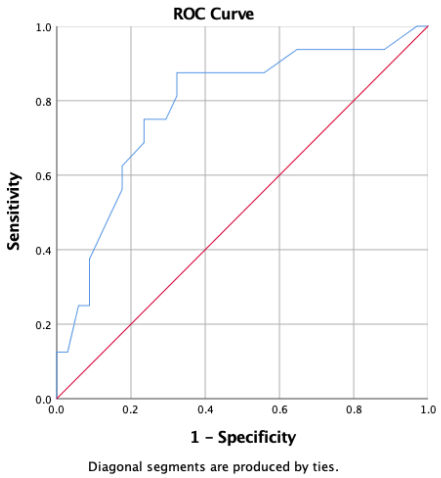


Figure 5

Receiver Operating Characteristics: Expert Clinical Opinion (.939) Sig. .000

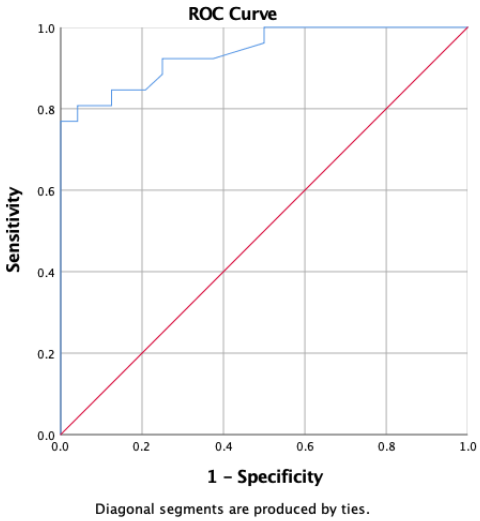
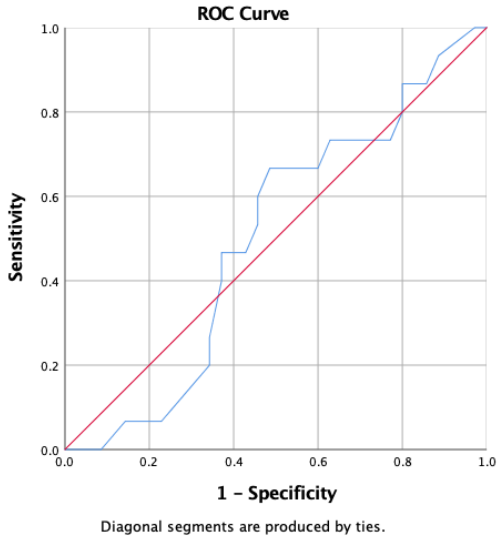


Figure 6

Receiver Operating Characteristics: IFSP State Variable (.501) Sig. .992



Simple Regression

Two simple regressions (Y = *a* + *b*X) were utilized to test the hypotheses that receipt of IFSP would not be associated with MIM scores, but that MIM scores would be related to ASQ:SE percentage scores. The hypothesis that receipt of Infant Mental Health (IMH) services would be associated with MIM scores was not tested, due to the fact that no participants indicated receipt of IMH services. Regression was used in order to gain a clearer idea of the magnitude of relationship between MIM scores and developmental risk in the current study.

IFSP and MIM. All assumptions for simple regression were examined to determine appropriateness of statistical test. There was independence of residuals, as assessed by a Durbin-Watson statistic of 1.975. Partial regression plots demonstrated linear relationships between the independent variables and the criterion variable. There was homoscedacity, as assessed by visual inspection of a plot of studentized residuals

versus unstandardized predicted values. Simple scatter plotting of studentized residual values and unstandardized predicted values also demonstrated linearity. An inspection of studentized deleted residuals revealed no outliers, and all leverage values were less than 0.2. Cook's distance was also examined, with no values exceeding 1. Histogram and P-P plot examining standardized residuals revealed approximate normal distribution.

Simple regression analysis revealed no significant relationship between IFSP status and MIM scores ($p = .976$), confirming that IFSP status does not contribute significantly to variance in MIM scores.

MIM and ASQ:SE. All assumptions for simple regression were examined to determine appropriateness of statistical test. There was independence of residuals, as assessed by a Durbin-Watson statistic of 1.870. Partial regression plots demonstrated linear relationships between the independent variables and the criterion variable. There was homoscedacity, as assessed by visual inspection of a plot of studentized residuals versus unstandardized predicted values. Simple scatter plotting of studentized residual values and unstandardized predicted values also demonstrated linearity. An inspection of studentized deleted residuals revealed no outliers, and all leverage values were less than 0.2. Cook's distance was also examined, with no values exceeding 1. Histogram and P-P plot examining standardized residuals revealed approximate normal distribution.

Simple regression revealed a significant relationship between social and emotional developmental risk as determined by the ASQ:SE and overall MIM scores ($F(1, 2004.432) = 17.094$, $p < .001$ (Table 15). R^2 for the overall model was .271 with an adjusted R^2 of 25.5%, a substantial effect according to Cohen (1988). An estimation of the regression equation using β coefficient is as follows:

$$Yi = B_0 + \beta_1 X_i + \varepsilon_i$$

Predicted ASQ:SE Score = 36.902 + (6.503*MIM Score)

Table 14

Regression Results, Social and Emotional Developmental Risk

	Sum of Squares	*df*	*Mean Square*	*F*	*Sig*
Regression	2004.432	1	2004.432	17.094	.000**
Residual	5393.967	46	117.260		
Total	7398.399	47			

*Note. **Significant at p < .001*

Canonical Correlation

Canonical Correlation Analysis (CCA) was used to examine multivariate associations between dimensions of parent functioning and child functioning. The CCA overall produced four pairs of canonical functions based on the four variables used in Set 1 (Parent Overall Guidance, Parent Engagement, Parent Nurture, and Parent Playfulness). The four pairs of functions had squared canonical correlations (R^2) of .86, .43, .19, and .08 for each successive function. The CCA model was significant for the first function, Wilk's $\lambda = 0.060$, $F(24, 95.402) = 4.909$ $p < .001$, accounting for approximately 86% of the variance shared between the two sets (parent versus child variables). Function 2 was also significant, Wilk's $\lambda = 0.422$, $F(15, 77.697) = 1.899$ $p < .05$, accounting for approximately 43% of the variance shared between the two sets in Variate 2. Functions 3 to 4 were not statistically significant and therefore not interpreted. The first pair of variates were correlated at .926, indicating a strong correlation between the parent variables and child variables. The second pair of variates were correlated at .657, also

indicating a strong correlation. Tables 15 and 16 display the standardized canonical coefficients (i.e. canonical weights), structure coefficients (i.e. factor loadings), and the cross-loadings for both functions. Upon examining structure coefficients for function 1, one sees that all variables showed large loadings to the respective canonical variates, with the exceptions of ASQ:SE and CBCL which were moderately correlated with the corresponding synthetic variate. In addition, parent nurture is the largest loading, indicating that nurture contributed heavily to relationship between dimensions. Notably, child (receipt of) nurture also appears to be more strongly related to the canonical variate than other child variables. Upon examination of canonical coefficients for function 1, it appears that both parent and child nurture made substantial contributions to the first pair of variates relative to other variables. Function 1 is modeled in Figure 7.

Upon examination of function 2, we see that parent and child engagement had the largest loadings. These variables were positively related, and along with parent and child nurture also had large standardized coefficients, meaning they made large contributions to the formation of the synthetic variate.

Table 15

Values for the First Canonical Function for Parent Dimensions Predicting Child Dimensions

Variable	*Standardized Canonical Coefficient*	*Structure Coefficients*	*Crossloadings*
Parent Guidance	-.112	-.905	-.837
Parent Engagement	-.136	-.890	-.824
Parent Nurture	-.709	-.985	-.912
Parent Playfulness	-.093	-.847	-.784

Table 15 (Continued)

Variable	*Standardized Canonical Coefficient*	*Structure Coefficients*	*Crossloadings*
Child Cooperation	-.019	-.795	-.736
Child Engagement	.211	-.772	-.715
Child Nurture	-1.017	-.986	-.912
Child Playfulness	-.137	-.824	-.762
ASQ: SE	.078	-.408	-.378
CBCL	-.176	-.366	-.339

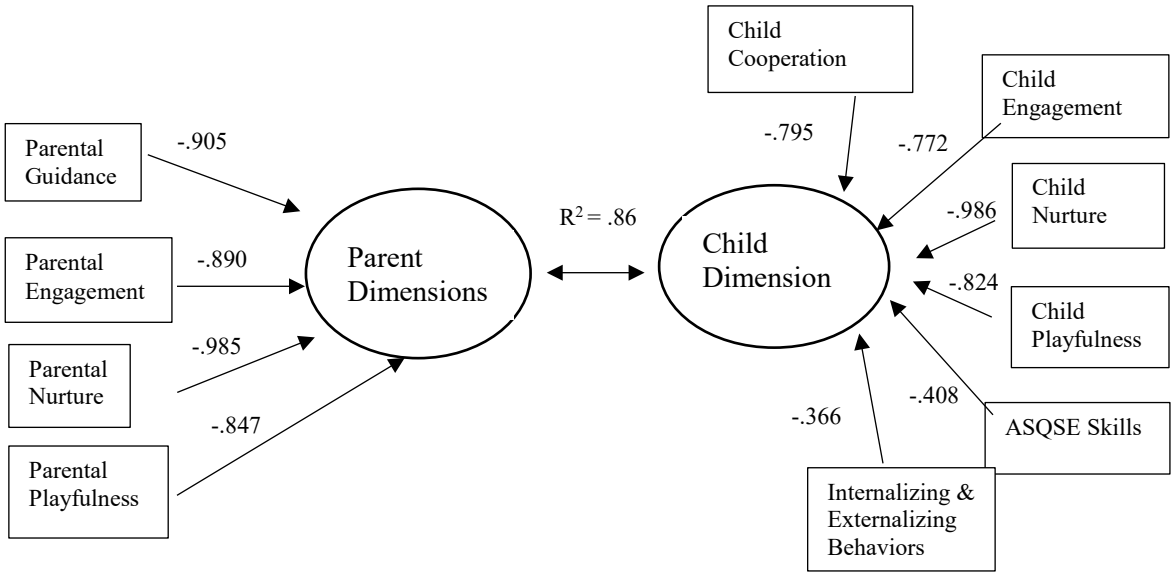
Table 16

Values for the Second Canonical Function for Parent Dimensions Predicting Child Dimensions

Variable	*Standardized Canonical Coefficients*	*Structure Coefficients*	*Crossloadings*
Parent Guidance	1.240	.-.014	-.009
Parent Engagement	-2.202	-.414	-.272
Parent Nurture	.891	.108	-.071
Parent Playfulness	-.046	-.200	-.132
Child Cooperation	.914	-.304	-.199
Child Engagement	-2.067	-.556	-.365
Child Nurture	.876	-.135	-.089
Child Playfulness	.068	-.217	-.143
ASQ: SE	-.664	-.183	-.120
CBCL	.601	.234	.153

Figure 7

Canonical Correlation Function 1 for Parent and Child Dimensions



Likert scales were administered to elicit participant subjective experiences of completing both the MIM and the SEAM. Mean score for the MIM was 8.38 and mean score for the SEAM was 8.00, with 10 indicating the maximum score ("I enjoyed very much") and 1 indicating the minimum score ("I did not enjoy at all"). Qualitative methods were used to develop open and axial codes to describe participant assessment experiences. Four axial codes were developed and are displayed with examples from participant feedback in Table 17. Overall, codes had a positive valence and participants appeared to experience both the MIM and SEAM as enjoyable and reflective activities. Themes extracted included the MIM and SEAM experiences as opportunities for: reflection about their child, experiences of interaction and bonding. Two other secondary

conflicting themes emerged: the MIM and SEAM experiences as frustrating or simple/easy.

Table 17

Qualitative Themes Related to Social and Emotional Assessment

Themes	*Examples*
Opportunity for Reflection	*"It was informational…not questions I would think about on a daily basis." (SEAM)* *"Interesting to think about the questions and really consider who my child is and where she's at developmentally." (SEAM)* *"I liked having the time and space to reflect on X's development."* *"I loved it because it showed me where he's at. It was good to hear questions because it helped me to realize what I want to work on with him." (SEAM)* *"It made me feel good about being a good mother and helping him learn."*
Opportunity for Interaction and Bonding	*"I enjoyed the opportunity to interact in new ways." (MIM)* *"It was good to bond and do things together." (MIM)* *"It was a fun experience to do with my son and see him happy."* *"It was a sweet series of activities to interact in." (MIM)* *"I liked the focus attention of playing one-on-one with my child. I don't do that enough."(MIM)*
Simple and Easy	*"It was simple, straightforward and fun to consider her skills."*
Frustrating Experience	*It's very frustrating completing these forms. Sometimes the categories don't make sense, like where you fall in between. Parents have to fill these out all the time and they usually make me feel awful/failure at all the "no's" you have to mark. Not a fan.* *"Frustrating, I did not feel like we were able to explore our true relationship."*

Summary

Correlations, including canonical correlations, for the tools administered were calculated in order to determine convergent validity of the MIM. ROC curves were plotted and regressions were run to determine predictive relationships between scores. The CBCL and PSI-SF demonstrated weak and insignificant correlations with the MIM. The ASQ:SE demonstrated moderate correlation with the MIM. For the ASQ:SE and "Expert Opinion" ROC curves revealed a large AUC, indicating strong sensitivity and specificity. For IFSP state variable, ROC curve revealed a small AUC, indicating poor sensitivity and specificity. Canoncial correlational analyses revealed strong correlations between composite parent dimensions and composite child dimensions, with both nurture and engagement having strong factorial loadings. Simple regression revealed a significant relationship between ASQ:SE and MIM scores, but the relationship between receipt of IFSP and MIM scores was insignificant. Finally, Likert scores and qualitative feedback regarding the social acceptability of the MIM and SEAM/SEAM FP were positive and participants indicated that the MIM was an opportunity for reflection about and bonding with their child.

CHAPTER V

DISCUSSION

The aim of the current study was to examine evidence for the convergent and social validity of the MIM as determined by the D-EIS coding system with a sample of infants and toddlers. The D-EIS is used to characterize patterns of behaviors in the MIM, an observational technique examining parent-child attachment through a sequence of play and caregiving activities. One major purpose of the MIM is to establish clinical areas of strength and need within caregiving (i.e. parent-child) relationships so that interactional therapy can target specific dimensions and behaviors characteristics of sensitive and responsive caregiving (Booth & Jernberg, 2010). The MIM is already being used world-wide as a clinical goal-setting tool in conjunction with a widely implemented interactional therapy called Theraplay, but little evidence to support the validity of the assessment has been established in the United States. Thus, it is essential to determine the validity of the D-EIS for use within varying populations.

More specifically, the current study aims to establish the validity of the D-EIS with infants and toddlers. This population has a potentially high rate of return on investment in early interventions due to the inherent developmental plasticity of infancy and toddlerhood (Center on the Developing Child, 2010). At the same time, this population is also chronically underserved and "overlooked," and thus improved early identification and detection is essential to improving outcomes (National Scientific Council on the Developing Child, 2007). Accordingly, the participants recruited for this study represented a fairly high-risk sample. As described earlier, approximately half of participants had an income of less than $25,000 per year, indicating potential exposure to

stress related to poverty and/or food and home insecurity. Eight percent of participants were experiencing homelessness at the time of the study, and 20% were living at a drug treatment center while receiving addiction treatment. As a result, parent-child pairs appeared to have elevated overall MIM scores in this sample, with a mean score of 2.097, almost a full point below the current established cutoff for referral to services (Salo & Mäkelä, 2018). Based on the clinical notes of the Principal Investigator, who is a licensed therapist with extensive experience, *all* participants from high risk settings (i.e. drug treatment center, homeless shelter) in the current sample demonstrated need for services to address needs in the parent-child relationship. Thus, it was not surprising that results yielded two ROC curve models in which D-EIS scores reliably sorted out risk and referral needs in this population. Interestingly, none of the participant dyads were receiving intensive IMH services or dyadic therapy, despite the appearance of both problematic behavior and circumstantial risk factors. Based on these models, along with results demonstrating the convergent value of the MIM for social and emotional developmental risk, it is reasonable to conclude that preliminary evidence of the D-EIS is a valid method for the purpose of identifying infant and toddler dyads who need more dyadic social and emotional support. Given that none of the dyads who were below cut-off (score of < 3) were receiving services at the time, this is an important finding. Based on the literature reviewed earlier, preventative relationship-based therapies seem to produce positive cascading effects across a family's developmental trajectory (Facompré et al., 2018). Therefore, both the identification *and* referral of families in need of intervention is an essential part of the "linked system," and the MIM could serve as both a screener and a springboard for further therapy by providing specific feedback, specific

information to form functional goals, and an opportunity to reflect and build rapport between practitioner and caregiver. In this small sample, it appeared that many families had "fallen through the cracks," perhaps because of the stressful and transient nature of life for these families.

Based on the qualitative feedback provided by families, the MIM experience may be a short, "fun," and "reflective" experience for families during times of stress and transition, and this study also provided evidence of feasibility within complicated, underfunded systems. First, the MIM was relatively quick, inexpensive, and portable, and able to be used across varying environments such as homeless shelters, treatment centers, homes, and schools. Second, although the researcher used videotaping to ensure fidelity of coding, a practitioner could easily use the MIM for live coding, providing a rich snapshot of relational capacities within a larger context of developmental testing. Finally, the MIM can be implemented in the context of self-report screening, adding another dimension to both a parent and a practitioner's perspective on the strengths and needs within the family.

While some evidence for the discriminant validity of the MIM was promising, overall, specific hypotheses predicting correlations between MIM and external measures were either not supported, or relationships were weaker than expected. In particular, MIM associations with the CBCL measure and the PSI-SF yielded few significant associations. Across all MIM dimensions and PSI subscale and total scores, correlations were weak and not statistically significant. The PSI-SF therefore did not provide evidence for the validity of the EIS coding system. In addition, all correlations outside of MIM nurture were weak and insignificant, and the hypothesis that CBCL scores would be

negatively associated with parent and child scores was mostly unsupported. However, as mentioned earlier, PSI-SF scores were impacted by defensive scoring, and thus interpretation should be handled with caution. In addition, among participants in high stress settings (e.g. homeless shelter and drug treatment center), the CBCL was not completed by ten participants due to participant constraints (for example, one participant found the wording to be "stressful"). In sensitive research contexts, difficult decisions about data completion must often be made, and the PI chose to prioritize the ASQ:SE and SEAM measure when participants became overwhelmed during data collection. With an already relatively small sample size, this may have impacted outcomes and should be taken into consideration for future research. Finally, the age of this sample was quite young (M = 28.82 months), and thus measures of behavior in isolation from the larger relational context, especially when trauma or toxic stress is present, may have "masked" latent vulnerabilities in infancy and toddlerhood (De Bellis & Zisk, 2014). Finally, it is possible that parents may be more preoccupied with issues of survival over meticulous observation and reporting on their child's behavior, and thus observational techniques may produce systematically different results in certain contexts. For this reason, future research about the MIM/D-EIS should incorporate more direct measures of sensitive and responsive caregiving. Additionally, from this perspective, it is possible that higher risk parenting populations may benefit more than other populations from *in vivo* observational techniques, and this hypothesis should be explored with further research.

Although evidence for convergent validity with the PSI-SF and CBCL was limited, the ASQ:SE, a measure of social and emotional development, and the SEAM (a programmatic assessment related to the ASQ:SE) provided moderate evidence for the

validity of the D-EIS coding system. The correlation between the composite EIS score the ASQ:SE was .521, indicating a moderate relationship. Given that the MIM evaluates parent-child relationship behaviors, while the ASQ:SE is a validated measure of social and emotional development, moderate correlations provide some evidence of convergent validity for the EIS. Based on the correlation of all MIM dimensions with ASQ:SE scores, it appears that the measures of attachment represented by the MIM are closely related to measures of social and emotional development in the ASQ:SE. Furthermore, simple regression confirmed a significant relationship between MIM scores and ASQ:SE scores, providing more evidence that the D-EIS is a valid indicator of social and emotional development in young children. One extension of this finding is the potential for the MIM to be used to link screening to brief dyadic intervention. While the ASQ:SE may provide an efficient indicator of risk, following up with observational assessment provides two important add-ons. First, it may provide an opportunity for parent and practitioner to reflect on the strengths and needs of the relationship experientially, which participants indicated a preference for in qualitative results. In fact, the most prevalent qualitative themes that emerged from the exit "interview" process were related to the enjoyment of assessment as a *reflective* and *interactive* experience. Second, the MIM creates a video feedback "product" that can be used in future intervention efforts to increase reflective capacity in caregivers.

Overall, the findings of this study agree with Salo and Mäkelä's (2018) findings that the D-EIS coding system may effectively identify children who are at risk for developing a poor attachment and socioemotional developmental trajectory. However,

more evidence using direct measures of attachment and sensitivity are needed to confirm Salo and Mäkelä's (2018) findings with respect to convergent validity.

As predicted, the presence of a disability or IFSP was not related to scores on the MIM, and an autism diagnosis in particular was not related to elevated MIM scores. In fact, in this small sample, the group mean of children with an autism diagnosis was higher than the group mean for the entire sample. All children with autism diagnosis, however, were also receiving services, and the small sample size precludes drawing any conclusions, but the field may benefit from more extensive examination of this in future research. It is also important to note that all participants diagnosed with a disability in this study were recruited directly from a local Early Intervention program and were all receiving intervention. Groups with elevated scores (i.e. homeless, addiction recovery) were receiving services related to housing and basic needs, but no participants reported receiving direct dyadic intervention, despite the prevalence of social-emotional delays (often paired with the absence of disability or other developmental delays). This preliminary finding brings up larger systemic questions about Early Intervention, Infant Mental Health, and the specialized needs of infants and toddlers experiencing toxic stress, instability and/or transience. More research is warranted to examine the overlap and "cracks" between the Early Intervention and Infant Mental Health systems and to propose systemic and policy solutions.

Finally, exploratory canonical analysis revealed a solution in which the set of parent behaviors and the set of child behaviors measured in this study were highly correlated with one another. One interesting finding from canonical Function 1 was the heavy factorial loading of both Parent and Child Nurture onto both synthetic variates.

Further understanding of the role that Parent and Child Nurture behaviors play in understanding infant mental health and intervention may be important.

Limitations

Significant limitations in the study design may have impacted results. First, although the study sample size was appropriate, given data collection issues around high-stress sites, a larger sample size may have yielded more evidence to confirm or disconfirm the validity of the MIM. Second, the sample lacked racial and ethnic diversity, which limits the generalizability of findings. Finally, measures chosen for external validation had relevance to constructs of interest, but did not directly measure the same construct (i.e. attachment) as the tool in question. Future validation research should include more direct measures of parent-child interaction, particularly parental sensitivity and responsivity.

Another limitation of this study was the relationship between the PI and subjects. The PI handled all recruitment, data collection, and data analysis, presenting a significant threat to internal validity. While interrater reliability was established for MIM coding, the social acceptability data was not double coded, and none of the coding was blind. In addition, the PI, who is a mental health provider, also determined the "the referral need" of each family without outside confirmation. The PI met with all subjects and was able to observe the environments and larger family contexts of each family in the study. While precautions were taken to objectively (e.g. checking with coding system developer, watching videos repeatedly) code data, it is possible that the PI brought bias into coding and analysis based on direct experiences and relationships with family. This threat to

internal validity should be accounted for in future similar research and if possible, coding and data collection responsibilities should be kept separate.

Future Research

More evidence is needed to understand the needs of the IMH/EI/ECSE systems in the area of social and emotional delays and the treatment of these delays. Future research for the MIM in particular should include other standardized observational coding systems for sensitivity-related constructs such as the Emotional Availability Scales or the Nursing Child Assessment (NCAST) (Barnard, 1994; Biringen, Derscheid, Vliegen, Closson, & Easterbrooks, 2014) for more conclusive evidence of the convergent validity of the MIM with high-quality tools. The NCAST in particular may provide insight into how accurate the MIM is in detecting problems very early on, such as in the newborn period. In addition, because one potential strength of the MIM is its ability to directly inform treatment planning, the next phase of research should include more elements of the "linked system" and explore the relationship between MIM assessment, treatment planning, and intervention effects. Finally, by recruiting a larger and more developmentally diverse sample in future studies, questions about which populations the MIM serves best may be answered. For example, it may be that the MIM could serve as an effective tool for "catching" children in high stress settings who only have developmental delays in the social and emotional domains. Further research with the MIM may illuminate how to best serve these high-risk "hard to catch" populations.

Conclusion

As highlighted in the review of literature, sensitive parent-child interaction is an important and malleable aspect of a child's early experience. Evidence from multiple

reviews demonstrates the effectiveness of early parent-child intervention as both prevention and intervention, in cases where disability, developmental delay, and/or environmental stress have impacted parent-child interactions (Bakersman-Kranenburg et al., 2005; Facompré et al., 2018; Raby et al., 2015). While the fields of both IMH and EI/ECSE agree that interactional capacities are essential to promoting developmental flourishing in early childhood (Division of Early Childhood, 2014), this study provides some evidence that dyads who may benefit from this kind of intervention are not being identified for or provided with these kinds of services. Similarly, Casanueva et al. (2008) found in a large sample of CWS-involved children that only 12.7% of the displaying developmental needs received an IFSP by age 3. Despite the fact that in many states social and emotional delays qualify a child for EI, the children in the current study who displayed delays and/or high risk had not been identified for social and emotional intervention services. This is likely due to structural problems (e.g. lack of training in this area, gaps in assessment) in the system that do not match the needs of families who may also be experiencing instability (e.g. frequent moving, lack of responsiveness, diminished parental capacity for advocacy) (Corr, 2015; Lightfoot & Liberte, 2006). It may be that by adding an observational tool to the standard practice of early childhood providers working in high stress populations, functional treatment plans can be developed more easily to address relationship-based needs, rather than only the needs of an individual child in isolation from his or her environmental context.

Overall, the results of this study provide some evidence for the usefulness and validity of the MIM. Results also highlight larger, systemic issues. With growing understanding about the lifelong impacts of stress and trauma across all dimensions of

functioning, there is an urgent need to align timely identification and intervention with what we now know about the impacts of trauma on young children. Further research and policy action to illuminate feasible, easily implemented solutions to solve the "falling through the cracks" problem may be one of the most pressing issues of research in our field. Solutions will require cross-collaboration among Early Intervention, Infant Mental Health, and Public Health researchers, but the payoff of an increasingly nimble and sensitive system may produce lifelong positive benefits for the most vulnerable among us.

APPENDIX A

MIM RATING DESCRIPTIONS

Emotional Interaction Style for Scoring MIM

	Parent's comprehensive ability to structure the situation relative to child's developmental level	**Child's general co-operation and ability to focus on the situation**	**Parent's emotional reciprocity and initiative**	**Child's emotional reciprocity and initiative**	**Parental nurture**	**Child's response to nurture**	**Parent's playfulness**	**Child's playfulness**	
	5. Good: Parental guidance/ developmental expectancies is characterised by flexibility, inventiveness, and an ability to motivate the child to make an effort **4. Adequate:** Parental guidance is clear **3. Variable:** Parental guidance is intermittent **2. Inadequate:** Parental guidance is slight **1. Non-existent:** Parental structuring and challenging is totally insufficient	**5. Good:** The child is focused, motivated, and expresses genuine interest in performing the tasks together with the parent **4. Adequate:** The child is capable of cooperation **3. Variable:** The child is capable of cooperation **2. Inadequate:** The child does not orient towards cooperating **1. Non-existent:** The child has difficulty performing coherently (and his/ her level of development)	**5. Good:** The parent demonstrates expressiveness, genuine warmth, marked mirroring and an active ability to seek and maintain emotional contact with the child **4. Adequate:** The parent is present in a positive and stable manner **3. Variable:** The parent's emotional orientation is impersonal **2. Inadequate:** The parent is not genuinely emotionally available or oriented to the child **1. Non-existent:** The parent is dismissive and hostile (either expressed directly, or indirectly through absence)	**5. Good:** The child reacts enthusiastically and openly positively to the parent and actively seeks the parent's attention (in a positive manner) **4. Adequate:** The child's reactions to the parent are consistently positive **3. Variable:** The child's reactions to the parent shift between neutral and resistant/ evasive (child-generated contact is little) **2. Inadequate:** The child's reactions to the parent are continuously resistant/evasive (also, the child makes no or only negative attempts at contact, although may react to parental bids) **1. Non-existent:** The child's reactions to the parent are incoherent and negative (anxiety, hostility, withdrawal)	**5. Good:** The parent is safe, natural and warm when offering the child nurturing **4. Adequate:** The parent is stable and pleasant when offering the child nurturing **3. Variable:** The parent performs nurturing tasks impersonally (briefly and in a detached manner) **2. Inadequate:** The parent offers only slight nurturing **1. Non-existent:** The parent's nurturing is non-existent or negative	**5. Good:** The child accepts nurturing and openly expresses that it feels good **4. Adequate:** Child shows interest in the nurture offered by parent even though the situation itself may pass quickly **3. Variable:** Awkwardness is observable in the child's orientation to nurturing **2. Inadequate:** The child tries (in one way or another) to avoid the nurturing situation **1. Non-existent:** Marked incoherence is observable in the child's orientation to nurturing	**5. Good:** The parent's overall way of behaving is playful **4. Adequate:** The parent invents a few playful actions **3. Variable:** Impersonal (artificial) playfulness **2. Inadequate:** Slight playfulness **1. Non-existent:** Playfulness is non-existent or negative	**5. Good:** The child participates and shows initiative in his/her play **4. Adequate:** A few playful moments **3. Variable:** Play is impersonal **2. Inadequate:** Overall the child rarely expresses anything positive, let alone playful reactions of initiatives **1. Non-existent:** The child is extremely dismissive or passive overall	**5. Good:** A positive story or recollection related to the child's persona/ personality, as an individual from babyhood **4. Adequate:** At minimum one recollection related to the child's persona/ personality, as an individual from babyhood **3. Variable:** Distancing **2. Inadequate:** Incomplete, disconnected. Parent relates only recollections of events and/or general facts that might portray any baby (you slept and ate) or the representation is fragmented **1. Non-existent:** No recollections or negative content

APPENDIX B

DEMOGRAPHIC WORKSHEET

Name: Phone Number & Email:

Code Name (Pet Name + Your Birth Year):

Example: SPOT1979

Your Age:

Are you of Hispanic, Latino, or of Spanish origin? _____

How would you describe yourself?

- ❑ American Indian or Alaska Native
- ❑ Asian
- ❑ Black or African American
- ❑ Native Hawaiian or Other Pacific Islander
- ❑ White
- ❑ Other: _____

Your Child's Age (years and months, i.e. 2 years and 5 months):

Income Bracket (Choose one):

- ❑ Less than $25,000
- ❑ $25,000 to $34,999
- ❑ $35,000 to $49,999
- ❑ $50,000 to $74,999
- ❑ $75,000 to $99,999
- ❑ $100,000 to $149,999
- ❑ $150,000 or more

What is your marital status?

- ❑ Single (never married)
- ❑ Married, or in a domestic partnership
- ❑ Widowed
- ❑ Divorced
- ❑ Separated

What is the highest degree or level of school you have completed? (If you're currently enrolled in school, please indicate the highest degree you have received.)

- ❑ Less than a high school diploma
- ❑ High school degree or equivalent (e.g. GED)
- ❑ Some college, no degree
- ❑ Associate degree (e.g. AA, AS)
- ❑ Bachelor's degree (e.g. BA, BS)
- ❑ Master's degree (e.g. MA, MS, MEd)
- ❑ Professional degree (e.g. MD, DDS, DVM)
- ❑ Doctorate (e.g. PhD, EdD)

Has your child received an autism diagnosis? (Y/N)

Has your child received any other developmental diagnosis (examples: processing disorder, feeding disorder, ADHD)?

Has your child received an Individualized Family Service Plan (IFSP)? If so, when?

If you have received an IFSP, what condition or delay qualified your child for IFSP?

If you have an IFSP, what kinds of services have you received?

APPENDIX C

D-EIS CODING TEMPLATE

Name:

Assessment of Emotional Interaction Style (D-EIS)

	Non-existent	Inadequate	Variable	Adequate	Good
GUIDANCE					
Parent Overall Guidance					
Parent Structure					
Parent Challenge					
Child's General Cooperation & Ability to Focus on the Situation					
Responding to Structure					
Responding to Challenge					
ENGAGEMENT					
Parent Engagement					
Child Engagement					
NURTURE					
Parental Nurture					
Child's Response to Nurture					
PLAYFULNESS					
Parent Playfulness					
Child Playfulness					
REPRESENTATION QUALITY					
Representation of the Child					

Notes:

APPENDIX D

D-EIS CODING SHEET EXAMPLE

Name: XXXX
Assessment of Emotional Interaction Style (D-EIS)

	Non-existent	Inadequate	Variable	Adequate	Good
GUIDANCE					
Parent Overall Guidance	1.5				
Parent Structure	1.5				
Parent Challenge	1				
Child's General Cooperation & Ability to Focus on the Situation	1.5				
Responding to Structure	1.5				
Responding to Challenge	1.5				
ENGAGEMENT					
Parent Engagement	1				
Child Engagement		1.5-2			
NURTURE					
Parental Nurture	1				
Child's Response to Nurture	1				
PLAYFULNESS					
Parent Playfulness	1				
Child Playfulness	1.5				
REPRESENTATION QUALITY					
Representation of the Child		2			

Notes:

Overall: Instances of synchrony and connection are not observed here. Child is restless, anxious, "lost", wandering about the room, and parent is unable to guide or nurture the child throughout the interaction.

Guidance

Does not provide guidance but waits for child to be cooperative. Child is extremely restless and disengaged with the process. Child does not receive mom's attempts at guidance and alternates between resistance, restlessly roaming. Does not focus or settle in at all. Mom gives up easily and skips many of the tasks.

Nurture

No attempts to nurture, child stops and becomes rigid/freezing when mother attempts to hand food to child. No feeding or lotioning occurs. Child does not seek contact, proximity, and mother does not use words or gestures attempt to invite child in to positive experiences.

Engagement

Going through the motions and also becoming annoyed, frustrated and making overtly hostile comments. "You were being a butthead." No observed synchrony, mom does not seem to sense child's inner world or needs but "waits" for child to maybe participate.

Playfulness

No identifiable attempts at playfulness and child is anxious instead of playful. Mom takes away the hats.

Representation: Quick, vague but positive. "Everyone loved you" and ends abruptly without much interest in communicating positive regard directly to child.

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