

## **Assessment and Screening for Early Detection**

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## **Why do we need early Screening and Assessment?**

Child well-being is globally defined as the multi-dimensional nature of health that is enhanced when physical, cognitive, and social-emotional-spiritual development is nurtured in developmentally appropriate ways (The Alliance for Child Protection in Humanitarian Action, 2021). There is widespread agreement that the early years of life are crucial to healthy child well-being because of the rapid changes in brain connectivity and skill acquisition, occurring during this time. Children who are nurtured, protected, and supported in the first years of life tend to have better individual outcomes and are more likely to grow up to become healthy, productive adults (Belsky et al., 2016; Sameroff, 2000; Shonkoff, 2014; Sroufe, 2021; Stern, 1995).

But, not all children have an equitable start in life, so that these early years are also a time of developmental vulnerability when infants are at risk for environmental adversity, the enduring effects of family disruption, trauma and violence (Lyons-Ruth et al. 2017; Osofsky and Lieberman, 2011). Children who have experienced environmental adversity—such as abuse, neglect, or poverty—are at markedly elevated risk for developing psychopathology. Children with disabilities or developmental delays are also more likely than other children to develop social, emotional, and behavioral difficulties (Ghosh-Ippen, et al., 2014). Moreover, racial and ethnic disparities in well-being emerge even before birth and inequities by additional sociodemographic factors (e.g., family income, home language, and maternal education) across domains of development become evident during the first year of life and grow larger as infants become toddlers (Davis et al, 2022; Graca, 2017; Lu et al. 2010; Wilkinson et al., 2021).

## The Need for Validated Screening and Diagnostic Measures

Because mental health problems are a major public health challenge during the first three years, the search for validated measures of screening and diagnosis has become critical in efforts to develop intervention techniques designed to improve overall child well-being. Effective prevention and intervention depend on the availability of feasible and validated measures of screening and intervention. Early identification, accurate diagnosis and effective treatment of emotional or behavioral disturbance in infants and young children can alleviate immeasurable suffering for young people and their families dealing with behavioral health challenges. Identifying developmental processes that are disrupted by adverse early environments is the key to developing better intervention strategies for children who have experienced adversity (Osofsky and Osofsky, 2010; Salo and Paul, 2007).

The lack of widespread acknowledgment of disorders of infancy is still a major challenge for practitioners in the field of Infant Mental Health, as it is well recognized that mental disorders occurring among infants often go unnoticed and undetected (Lyons-Ruth et al., 2017). While this may be due to a pervasive impression that children of that age do not experience serious emotional difficulties or develop mental health problems (Osofsky and Lieberman, 2011), it may also be because of the paucity of valid instruments to assess and diagnose children so young. There is therefore a critical need to examine and where necessary to refine and expand early screening for infants and toddlers to detect mental health issues, such as relationship disorders, depression and self-regulation problems. There is a clear case for prioritising earlier identification of need and provision of

appropriate support for children in their families during this phase of life (Barlow & Schrader McMillan, 2010; Brandt, 2014; Lieberman & Van Horn, 2008; Luoma et al. 2001).

There is also a growing consensus that the assessment of young infant's emotional, behavioral, relational and developmental capacities must involve a multifaceted, multi-layered and multidisciplinary framework. The process of assessment should be based on an integrated developmental model and should integrate information from multiple sources, both in terms of formal and informal information gathering techniques. An integrated approach is important for the most vulnerable families suffering multiple risk factors and needing a range of different supports (Costa and Noroña, 2019; Hutchon et al, 2019; Zeanah and Zeanah, 2009).

What do we mean by Screening and Early Assessment?

Effective assessment and intervention depend on feasible and validated measures of screening and assessment. Screening can detect signs that indicate whether a young child may be delayed in aspects of development, such as regulation, communication, autonomy, affect, and interaction with people, while assessment is a more comprehensive process that uses a series of different tests or instruments to help create a diagnosis in terms of the infant's social-emotional development. Screening, assessment and intervention should be regarded as an integrated seamless process, as screening and assessment provide the starting point for discussing the difficulties of the infant or family risk factors together with parents or caregivers.

Screening

Screening is a brief, simple procedure used to identify infants and young children who may be at risk for potential health, developmental, or social-emotional problems. Developmental screening, using valid, reliable screening methods enables professionals to detect children who may be at risk for developmental and social-emotional concerns, accurately and cost-effectively. These screening tools are typically based on caregiver report and take the form of a series of questions or checklists used to track children's development relative to milestones achieved by a larger group of children of the same age. Most screening measures are concerned with developmental problems, screening for children's socio-emotional and behavioral problems and family psychosocial problems, e.g. parental mental health problems, substance use issues, parental stress or parent-child relationship problems.

Holistic screening in infant mental health settings may include screening measures that assess social and emotional risk and resilience factors in mother, father and the infant's wider social network, which form the context within which the child is developing. Standardized screening measures can be administered by medical or mental health professionals in the context of medical, early care settings or home settings, providing ample opportunity for universal approaches to IMH screening and intervention. The process of screening is not intended to serve as a diagnosis for a child—but rather to carefully and accurately inform about the need for meaningful next steps, such as more in-depth social-emotional assessment. In a word, screening can be thought of a snapshot of the child's capacities and family situation and can help determine if the child is meeting the appropriate milestones for their age or in need for support.

Several screening tools are available to screen for developmental issues and social-emotional concerns in the child and connect the child to helpful interventions. What tools are feasible depends also on the setting and resources of health care services in each country or

culture. An example of a very brief and simple screening tool for primary care settings in developing countries is the Brief Infant Mental Health Scale (BIMHS) (Puura, Malek & Berg, 2018). The BIMHS has only six items that cover possible parental worry about the child, general wellbeing of the parent, growth of the infant, two items on socio-emotional development (eye contact and shared pleasure in interaction) and finally the professional's possible worry about the infant. In case any of the items raise concern, the measure gives suggestions on how to further investigate the issue with the parent. The Ages and Stages Questionnaire (ASQ-3) is an example of a slightly longer screening instrument for detecting problems in social-emotional development of the child. It asks parents or other caregivers to answer a series of simple questions regarding their child's social-emotional development and children whose social-emotional development appears to fall significantly below that of their peers are flagged for further attention. An example of a screen for risk factors is the Adverse Childhood Experiences (ACEs) questionnaire, which is a 10-question instrument used to screen for childhood adversity. Another widely used screening instrument for perinatal mood and anxiety disorders, is the Edinburgh Postnatal Depression Scale (EPDS). Screening tools such as these are used only to indicate the need (or lack thereof) for further assessment and do not constitute a thorough assessment in-and-of themselves.

## Assessment

While screening is used to identify children who may be at risk for certain mental health issues, assessment consists of different methods and instruments to help create a diagnosis in terms of the infant's social-emotional development. The assessment of children, age 0-3, aims to discover how the child is responding to their environment, how they are developing, what kinds of problems they may be experiencing, and how supportive their caregiving relationships are.

It must be recognized that infant developmental assessments are not the same as a thorough infant mental health assessment. While a developmental assessment can identify developmental delays in cognitive areas, it should never be the only source of information. An infant mental health approach to assessment incorporates a developmental, relational, and biological perspective on the presenting symptoms and includes data collected from interviews, observation of dyadic or triadic interactions, as well scores on validated screening tools. Assessment is the start not the end of the process, so that the results of assessments can be used to determine the best level of care, the right services and help point to the needs of the child.

How and where are assessments carried out?

Infant mental health assessments rely much more heavily on observations and interactions and frame mental health issues in the context of the development and relationships of the young child. In practice, this means providing the opportunity for practitioner and family to observe the baby's behavior together and to provide practitioners and family with opportunities to see the world through the eyes of the child and thus enhance the caregiver-infant relationship. This can take place in hospital, clinic or home settings and can be done in-person or on-line. Clinicians can make use of unstructured naturalistic observations or use one of the many structured procedures for observing the infant, like the Alarm Distress Baby Scale (ADBB, Guedeny & Fermanian, 2001) caregiver-infant interactions, such as the Emotional Availability Scales (Birengen, 2000) or the Parent-Child Early Relational Assessment (PCERA) Clark, (1999), which will be described later in this chapter.

Clinicians face some age-specific challenges in assessing infants and toddlers. For young children context and relationships are influential, and the variation in their behavior across

settings is highly informative. Due to all these factors, infants and toddlers cannot be effectively assessed in one meeting. The assessment is usually easiest to start with a clinical interview with the parents or caregivers about the concerns of the parents and possible symptoms of the infant. Parental reports and views on the infant's characteristics and temperament, on the caregiver-infant relationship and on the risk factors affecting the family are also important.

In practice, most infant mental health assessments will involve several sessions. For example four to six sessions are recommended by ZERO TO THREE, The National Center for Infants, Toddlers, and Families (Zero to Three, 2016). For diagnostic assessment with the DC 0-3 or DC 0-5, it is recommended that assessment should occur over the course of several weeks and involve the primary caregiver or caregivers and need to include multiple contexts over time. Assessments should include at least one home visit and should include visits to the child's childcare setting if applicable. Children need to be seen in their own environments, as this is where they should be the most comfortable. However, clinic or office visits may also be included to look at differences in behaviors and interactions in an unfamiliar setting.

Infant mental health assessments can only be a value to a child and to the family and for the mental health service if they contribute to our understanding of the child's needs and ultimately to treatment planning and an improved quality of life. Infant mental health assessments are often conducted by teams, so that Infant Mental Health Practitioners may come from a variety of disciplines— social workers, psychologists, nurses, nurse practitioners, psychiatrists, occupational therapists, pediatricians, speech-language pathologists, or early intervention specialists. For example, the speech therapist may conduct a speech evaluation, an occupational therapist may evaluate the child's skills and abilities, and the psychiatric nurse



practitioner or psychologist may evaluate the child's emotional, social, and family functioning. Collaborative skills are critical for an effective infant mental health assessment. Increasingly, early interventionists are adopting an infant mental health approach to assessment and intervention – searching for family strengths, listening to parents, helping the family identify stressors, and helping the family to keep the baby in mind. They also develop healthy professional relationships with the family while assisting the family in meeting the outcomes identified by the family. Parents and primary caregivers should have access to effective supports to ensure successful transitions to the new roles as parents, mitigating potential distress and isolation for the parents and nurturing the healthy mental and emotional development of the child. This may also include connections to community-based services to meet health-related social needs that are required to treat depression and anxiety, such as financial counseling services or housing supports.

### **Where and When: Specific Prenatal, Neonatal and Later Infancy measures**

#### The Prenatal Period

Unfortunately, large numbers of women across the world receive little or no care during or before pregnancy. Addressing this issue in low- and middle- income countries (LMIC) where minimal essential care is generally available is critical for improving maternal and neonatal health status and decreasing the associated morbidity and vulnerability to anxiety and depression. Maternal undernutrition, alcohol and drug-use, infections and chronic diseases carry a high risk for poor maternal and neonatal health, while anxiety and depression symptoms are common among pregnant women worldwide. Regular antenatal checkups with improved screening can save many maternal and neonatal lives and pregnancy and the transition to parenthood is a period

of critical vulnerability, so that there is a need for interventions to improve the health of women and their newborns and to make their pregnancy safe (Barlow & Schrader MacMillan, 2010).

In recent years, there has been increased awareness of the importance of screening in preconception period and during pregnancy to increase awareness and promote health right from conception onwards. Early pregnancy and prenatal appointments and checkups provide practitioners with an opportunity to assess social and emotional risk and resilience factors in mothers, fathers and the wider social network. The purpose of antenatal screens is to evaluate any significant risk factors in the mother's life. These include mental health problems, domestic violence, drug and alcohol abuse as well as risks to the fetus, including substance abuse, smoking and significant levels of antenatal anxiety or depression. Prevention, screening and treatment can be effective in lessening the symptoms of these disorders and the resulting impact on families. Resilience factors may include evidence of coping, supportive family relationships, especially with partner and own mother, and other relationship support.

#### Perinatal Mood and Anxiety Disorders

Recent focus on perinatal anxiety and mood disorders has drawn attention to the mental health needs of perinatal women and their partners and the effects of these untreated conditions on mothers, partners, infants, and children. The consequences of delaying care for pregnant mothers can be long term and life-threatening and may lead to severe emotional problems and general medical problems in mothers, fathers and children if early appropriate treatment is not received. For almost all parents, the perinatal period can bring increased anxiety and uncertainty as parents experience dramatic psychological, behavioral, and neurobiological adjustments as the foundations of parenting are established and both parents are experiencing the stress of a major

life change, including job strain and depressive or anxiety symptoms. Women who give birth to preterm infants or infants with congenital anomalies or who experience a traumatic birth especially from an emergency cesarean section also have an increased incidence of perinatal depression. While perinatal depression can affect individuals of all backgrounds, low socioeconomic status, poor access to education and healthcare, adolescent age and recent immigrant status are thought to lead to a postpartum depression in this population demographic (Ceballos et al. 2016; McCoy et al. 2016; Reyes Cruz & Sonn, 2011).

An example of a screening tool for perinatal depression or anxiety is the Edinburgh Postnatal Depression Scale (EPDS)(Cox et al. 2014), which is widely used in several countries. The EPDS is a set of 10 screening questions which can indicate whether a parent has symptoms that are common in women with depression and anxiety during pregnancy and in the year following the birth of a child. It can be completed by the mother or provider in any healthcare setting and reviewed by the provider for immediate follow-up. The mother checks off one of four possible answers that is closest to how she has felt during the past week. The EPDS is not intended to provide a diagnosis but is designed to screen women for symptoms of emotional distress during pregnancy and the postnatal period. The authors point out that the EPDS score should not override clinical judgment, so that a careful clinical assessment should be carried out to confirm the diagnosis. Discussing the EPDS with the parent promotes the use of open discovery questions, listening, reflecting and goal-setting to enable them to reflect on their particular priorities for themselves and to support them in finding their own solutions to the challenges they face.

After screening and assessment, intervention with expectant parents can be carried out by pediatric or obstetric residents, nurses, social workers, early intervention specialists and

paraprofessionals in obstetrics offices taking on the educating role to provide it; links to community groups who provide it; and novel approaches using the Internet and digital health platforms to teach it (with the necessary attention to access issues for marginalized and less literate populations).

### **The Neonatal Period**

Neonatal neurobehavioral assessment has become a standardized component of clinical care provided to newborn infants, guiding neonatal clinical care and subsequent access to early interventions and services. The most widely practiced assessments used to provide an objective quantification of newborn behavior observed during the clinician-infant interaction are:

- The Neonatal Behavioral Assessment Scale (NBAS) (Brazelton & Nugent, 2011)
- The Assessment of Preterm Infants' Behavior (APIB)(Als et al. 1982)
- The NICU Network Neurobehavioral Scale (NNNS) (Lester & Tronick, 2004)
- The General Movements Assessment (GMA) (Prechtl, 2001)
- The Hammersmith Neonatal Neurological Examination (HNNE) (Dubowitz et al. 2005).

The Neonatal Behavioral Assessment Scale (NBAS), developed by Berry Brazelton, is a neurobehavioral assessment scale, designed to describe the newborns' responses to their extrauterine environment and to examine the effects of wide a range of pre-and perinatal risk factors, such as prematurity, low birthweight, undernutrition, the effects of prenatal substance exposure and exposure to environmental toxins and used to document the contribution of the newborn infant to the development of the emerging parent-child relationship. The NBAS consists of 28 behavioral items, which measure the infant's behavioral capacities, and 16 reflex

items, which measure the infant's neurological status and is suitable for examining newborns and infants up to 2 months old. The NBAS can also be used to demonstrate the newborn infant's behavioral capacities to parents, thereby strengthening the relationship between parent and child and supporting family adjustment (Bruschweiler-Stern, 2009; Nugent & Brazelton, 1989).

The Assessment of Premature Infant Behavior (APIB) (Als et al. 1982) is a neurodevelopmental diagnostic instrument designed to assess preterm, at risk, and full-term newborns from birth to 1 month CA. The APIB can be used by newborn intensive care, healthy newborn nursery, and follow-up clinic staff professionals. Inspired by the NBAS, the main objective of the APIB is the assessment of infant individuality and competence, based on observation of the behavioral sub-systems in interaction with each other and with the environment. The subsystems include the autonomic (respiration, digestion, and color), motor (tone, movement, and postures), state organization (range, robustness, and transition patterns), attention (robustness and transitions), and self-regulation (effort and success) systems as well as the degree of facilitation required. The APIB has well established inter-rater-reliability, concurrent and construct validity, and is clinically relevant for behavioral intervention and individually appropriate and supportive care.

The NICU Network Neurobehavioral Scale (NNNS) (Lester & Tronick, 2004) is an assessment of infant neurobehavior designed to provide a comprehensive assessment of both neurological integrity and behavioral function of infants exposed to high-risk conditions such as drugs and/or prematurity. The NNNS assessment includes 3 parts: 1) classic neurological items that assess active and passive tone, primitive reflexes, and CNS integrity; 2) behavioral items including state, sensory and interactive responses; and 3) stress/abstinence items that document

the range of withdrawal and stress behavior likely to be observed in substance-exposed or high-risk infants. Infants can be assessed in the preterm period once they are medically stable.

The General Movements Assessment (GMA) (Prechtl, 2001) is a non-intrusive observational technique used to identify neurological issues which may lead to cerebral palsy and other developmental disabilities. General Movements are associated with neural development, so that the GMA is used to identify absent or abnormal general movements. This assessment describes the repertoire of complex, highly variable, spontaneous whole-body movements which emerge in the fetus and continue until the first 4 to 5 months of life. The GMA allows for motor-function-based diagnosis without the need to apply stimuli. Infants whose general movements are absent or abnormal on the GMA are at higher risk of motor dysfunction, especially cerebral palsy.

The Hammersmith Neonatal Neurological Examination (HNNE) and the Hammersmith Infant Neurological Examination (HINE) were initially developed by Lily and Victor Dubowitz in 1981 and revised in 1999 (Dubowitz et al. 2005). The HNNE includes 34 items subdivided into 6 categories (tone, tone patterns, reflexes, movements, abnormal signs, and behavior). The HINE consists of 26 items and can be used on infants aged between 3–24 months of age to assist in the early detection of motor impairments and the diagnosis and prognosis of cerebral palsy (CP) in both infants born preterm and at term. It has the advantage of being quick, practical, easy to perform and easy to record even by non-experts using a recording sheet (proforma) that includes diagrams and definitions.

### **Supporting the parent-infant relationship in the neonatal period**

Due to the recent rise of family-centered approaches in neonatal care, an additional objective included in some assessment approaches concerns the evaluation of the infant in the context of the parent-infant dyad in order to promote infant health and the caregiving relationship. Family-centered neonatal interventions, such as the Newborn Behavioral Observations system (NBO) and Newborn Individualized Developmental Care and Assessment Program (NIDCAP), and the Facilitating Attuned INteractions (FAN) are used to help parents transition to the caregiving role and promote parenting efficacy.

The Newborn Behavioral Observations (NBO) system (Nugent, Keefer, Minear, Johnson, and Blanchard, 2007) is an interactive relationship-building tool, used to strengthen the relationship between infants and parents and to improve the goodness-of-fit in parent-infant dyads, and in turn, support the development of infant temperament and emotion regulation. at a time when the very bases for parental functioning are being established. Inspired by the Neonatal Behavioral Assessment Scale, the NBO consists of 18 neurobehavioral observations and is designed to show that newborns possess a wide range of visual, auditory, and perceptual abilities that allow them to explore the world around them and to engage in face to-face, eye-to-eye mutual exchange. Over the course of serial observations, the NBO yields an individualized profile of the infant's behavior so that the clinician and parents can discuss the implications of the baby's responses for the management of sleep, feeding, and crying in addition to identifying the kind of interaction that is best suited to the infant's behavioral threshold and style. In a number of randomized control studies the NBO was associated with enhanced mother–infant engagement, a reduction in postpartum depressive symptomatology and anxiety levels and was effective in helping parents be more responsive to their infant's communication cues (Kristensen et al. 2020; McManus et al. 2020; Nicolson et al. 2022; Nugent et al. 2014; Nugent et al. 2017)

The Newborn Individualized Developmental Care and Assessment Program (NIDCAP) (Als, 2009) is research-evidenced system, designed to assess and support the individual strengths of the prematurely born infant and other high medical risk infants, while they are still in hospital. It conducts detailed behavioral observations of the infant's communication to form the basis for decision-making, planning and care. The NIDCAP model gives the infant a voice and an active role together with the family and embraces a caregiving approach that focuses on each infant's unique behavioral communications system. It supports family competence and confidence on their path to increased independence, so that NIDCAP is based on a deep respect and care for the dignity, comfort and well-being of infants and their families. NIDCAP is associated with enhanced brain structure and improved your behavior outcome in infancy and childhood and adulthood (Als et al. 2012). NIDCAP training is appropriate for clinicians and developmental professionals and consultants in the newborn intensive care, healthy newborn nursery, and follow-up clinic setting.

The Fussy Baby Network<sup>®</sup> (FBN) and the FAN (Facilitating Attuned Interactions): The Fussy Baby Network (Gilkerson et al. 2012), is a family-centered program supporting families struggling with infant crying and related concerns. High levels of infant crying place families at risk for disrupted relationships, parenting stress, and even for child maltreatment, so that the Fussy Baby Network is designed to assess the infant, support parents and reduce family stress. The FAN (Facilitating Attuned INteractions) approach is an extension of this work and is used to train practitioners to engage parents around their urgent concerns about their baby's crying, sleeping, or feeding in a way which builds their longer-term capacities as parents. It helps practitioners improve their ability to read parents' cues and respond with interventions that match what parents most need moment-to-moment.



## **When and Where in Later Infancy**

Infant mental health emphasizes the importance of caregiving relationships as having major effects on the young child's social and emotional experience. Just as negative life events in early childhood can affect brain structure, positive experiences can repair damage done to the brain and form new neural pathways that set the child onto a better developmental trajectory. The first years of life provide an opportunity for parents and families, supported by infant mental health practitioners, communities and policymakers to create healthy and stimulating environments that support the caregiver-infant relationship and promote the ability of infants to reach their full potential.

In practice, IMH assessments enable us to look simultaneously at what the caregiver(s) bring(s) to the setting AND what the baby brings to the setting, as well as how the child and caregiver work together in both calm and stressful times. Infant-caregiver relationships should be a centerpiece of assessment in infant mental health. The child's behaviors, competencies and problems are identified as well as how that child can regulate their behavior and emotions with and without their caregiver's support. Healthy caregiving relationships, which are embedded within multiple social and cultural context promote social competence young children which, in turn, is associated with adaptive behavioral emotional and cognitive outcomes.

Ideally, the setting for infant screening and assessment in the early years should include multiple contexts over time - home visits, clinic visits, the child's childcare setting if applicable and should occur over the course of several weeks and involve the primary caregiver. The following are some instruments used in Infant Mental Health settings:

The Brief Infant Mental Health Scale (BIMHS, Puura, Malek & Berg, 2018) is a simple screening measure developed particularly for countries where infant mental health services may

be scarce or just beginning to develop. The BIMHS has only six items that cover possible parental worry about the child, general wellbeing of the parent, growth of the infant, two items on socio-emotional development (eye contact and shared pleasure in interaction) and finally the professional's possible worry about the infant. In case any of the items raise concern, the measure can be adapted to local context to give suggestions on how to further investigate the concern raised, and what services could be available for the infant or parents.

The Bayley Scales of Infant Development (BSID) (Bayley, 2006) is a norm-referenced developmental assessment tool for diagnosing developmental delays in infants and toddlers. BSID IV, the current version of the scale, was published in 2019 and has greater clinical sensitivity and accuracy when compared to BSD I, II or III. BSID IV assesses development from 16 days to 42 months in 5 domains - cognition, motor, language, socio-emotional, and adaptive behavior. The BSID helps in detecting developmental delay early and also in initiating early developmental intervention by individualizing the management of the young child's developmental and learning needs.

The Battelle Developmental Inventory, Third Edition (BDI-3) (Glascoe & Byrne, 1993) is widely used as a screening tool from birth up to 7 years. The Battelle measures a child's progress in the following areas: Adaptive, Social-Emotional, Communication, Motor, and Cognitive. It has robust psychometric properties although its ability to discriminate effectively among various degrees of functioning in the early months has been questioned (Alfonso et al. 2010). The most common target population of the Battelle is children with autism spectrum disorders.

Ages and Stages Questionnaire (ASQ-3 – Third Edition) (Squires and Bricker, 2009) consists of a series of 21 parent/caregiver-completed questionnaires. It is designed to screen the

developmental and social-emotional performance of children in the areas of communication, gross motor skills, fine motor skills, problem solving, and personal-social skills. The target population is children between one and 66 months of age and is used to identify those children who would benefit from in-depth evaluation for developmental delays. Validity and reliability have been demonstrated through a number of psychometric studies. The ASQ-3 has been translated and validated into multiple languages, and studies have shown both the disadvantages and the effectiveness of the measure when translated and culturally adapted for use in various countries.

The Toddler Social & Emotional Assessment – Revised (ITSEA) (Carter et al. 2003) and the Brief Infant-Toddler Social and Emotional Assessment (BITSEA) (Briggs-Gowan et al., 2004) were both developed to assess social-emotional and behavior problems as well as delays or deficits in the acquisition of competencies that may arise between the ages of 12 and 36 months. The BITSEA is based on the longer ITSEA and the authors suggest that positive screens on the BITSEA should be followed by the ITSEA. BITSEA scores have been found to be highly correlated with the longer ITSEA. Both assessments include parent and childcare provider forms that can be completed independently as a questionnaire or administered verbatim as an interview.

Finally, the Adverse Childhood Experience (ACE) scores (Felitti et al. 1998) can be used by infant mental health clinicians to screen for childhood adversities. ACEs have been defined as stressful experiences occurring during childhood that directly harm a child or affect the environment in which they live and represent a variety of negative experiences, such as, physical and sexual abuse, and neglect or growing up in a house with a harmful family environment as a result of domestic violence or substance abuse. Exposure to these experiences has been linked to a range of negative health conditions, including poor mental health, substance use disorder,

adverse health behaviors, chronic physical disease, and shortened life span. As a screening tool, the ACE score approach has the advantages – and limitations – of simplicity: its simplicity facilitates wide-ranging applications in public policy, public health and clinical settings but risks over-simplistic communication of risk/causality, determinism and stigma. Other ways of measuring adversity - examining single adversities or using theoretically or empirically driven methods - might have advantages over ACE scores.

#### Observation methods in Later Infancy

The Alarm Distress Baby Scale (ADBB), is meant for infants between 2 and 24 months of age and measures sustained withdrawal behavior in infancy, which is an important alarm signal to draw attention to both organic and relationship disorders. The scale has good criterion validity as a screening procedure for detecting the developmental risk of the infant. The cutoff score of 5 with a sensitivity of 0.82 and a specificity of 0.78 has been determined to be optimal for screening purposes in several countries (Guedeney, Matthey & Puura, 2013). The scale can be used in different clinical settings, provided a sufficient level of social stimulation is given to the infant in a relatively brief period of time. The scale can be used by nurses and psychologists or by medical doctors after a short period of training.

Emotional Availability Scales (Biringen, 2000) is a method of assessing dyadic interaction for the emotional availability of the parent to child and child to the parent. It is a global measure of overall interactional style in each partner and requires clinical judgement and an awareness of contextual factors. There is extensive research to show it is highly associated with the infant's later attachment behaviour. Two versions of the four EA scales are available for

different ages of the child, while ‘The Infancy to Early Childhood Version’ can be used for children 0 to 4 years of age. The recommended method for coding the EA scales is to video-record and later analyse at least 20 minutes of interaction. Training is required to reach reliability on the scales.

The CARE-Index (Crittenden 1997-2004) is based on a brief (3-4 minutes of ‘playing and talking’) video-clip of caregiver and infant or toddler (range 2 months to 4 years). It is used in a number of infant-mental health settings both for initial assessment and for outcomes evaluation. The tool demands extensive training to reach reliability. It is often used in child protection evaluations and recommended for this purpose. Further information is available at <http://www.patcrittenden.com/>

The Parent-Child Interaction (PCI) Feeding and Teaching Scales, developed as part of the Nursing Child Assessment Satellite Training (NCAST) program by Kathryn Barnard and colleagues, consist of a series of observable behaviors that describe caregiver/parent child interaction in either a feeding or teaching situation (Barnard, 1994). There is extensive body of research across disciplines supporting their validity and reliability and have been used across disciplines to guide intervention.

The Parent-Child Early Relational Assessment (PCERA) (Clark, 1999) is an observational coding system designed to measure the affective and behavioral quality of parent-child interactions at an evaluation during three 5-min situations: (1) meal time; (2) a structured task (e.g., parent attempting to get the infant interested in a toy); and (3) free play. The original assessment, which targeted psychiatrically ill mothers and their 2- to 48-month-olds, has been

revised and modified for use with a broader age range (i.e., 0–5 years), fathers, and other high-risk groups (e.g., prematurely born infants).

### **What do we do after – diagnosis and treatment planning**

Today, the prevailing diagnostic classification system for infant mental health is that developed by ZERO TO THREE (<https://www.zerotothree.org/>): the Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood (1994, 2005, 2016, 2021). In order to be able to assess and diagnose infants and toddlers, clinicians need to be familiar with this Diagnostic Classification system (Emde, 2016). The classification system frames mental health issues in the best interests of the child and what can be done to support the child. It is a diagnostic system specifically designed to evaluate and diagnose children from birth through age three. It is developmentally-based and was created to support clinicians in diagnosing and treating mental health problems in the earliest years. The DC 0-3 classification is organized into five descriptive axes to provide clinicians with a comprehensive diagnostic profile, while the revised DC:05 (2016) was expanded to include children from birth to 5 years.

The updated DC:0-5, Version 2.0, which was published in 2021, enhances the professional's ability to diagnose and treat mental health problems in the earliest years by identifying and describing disorders not addressed in other classification systems and by pointing the way to effective intervention approaches. The purpose of the DC is not to label young children with a mental health diagnosis but to identify and classify disorders in order to provide effective early intervention. Specifically, it is designed to enable mental health practitioners to:

- Recognize mental health and developmental challenges in young children,

- Understand how relationships and environmental factors contribute to mental health and developmental disorders,
- Use diagnostic criteria effectively for classification and intervention,
- Work more effectively with parents and other professionals to develop effective treatment plans.

Diagnosis is not just “labelling”, but is a way of knowing, of understanding, as Campbell Paul points out, when he writes, “Classification of mental health problems allows us to communicate about how we understand the problems that a very young child might be having, the problems they are having in relationships and development, and communicating this to colleagues, parents, and sometimes government agencies who need to act to protect the welfare of young children” (Paul, 2021). The infant mental health diagnostic system frames mental health issues in the context of the development and relationships of the young child. In practice, it means providing the opportunity for practitioner and family to observe the baby’s behavior together and to “make meaning” or interpret the baby’s behavior. Establishing a relationship of respect and trust between the practitioner and caregiver is at the heart of the infant mental approach to assessment and diagnosis.

In sum, the goals of infant mental health assessment and diagnosis include the following:

- Screening to identify children needing further assessment to determine the need for health and other special services or supports
- Assessing the child’s strengths to diagnose developmental delays or special needs
- Diagnosing infant mental health disorders

- Determining eligibility for early intervention or further support
- Planning a support program and monitoring a child's progress

### Beyond formal assessment

Screening and assessment can also open up the possibility for a shared discussion between caregiver and clinician about the child and the family. Practitioners need to be ready to engage caregivers as partners in the assessment process. This will enable the practitioner to become aware of the emotional, social and health needs of the whole family because these form the context within which the young child is developing. Above all, practitioners need to develop trusting relationships with families as part of the process. A strengths-based non-judgmental approach means inviting parent's perspectives into the conversation, in order to move forward with equitable shared decision-making and treatment planning (Nugent et al. 2007; Zeanah and Zeanah, 2010). There are many strengths-based programs that exemplify an equitable relationship-based approach to treatment planning and intervention in later infancy and beyond, such as the Minding the Baby® Home Visiting (MTB-HV) program (Slade et al. 2020), Parent-Infant Psychotherapy (Fonagy et al. 2016), The Touchpoints approach (Singer & Hornstein, 2010), HealthySteps, (Davis et al. 2022), the Circle of Security (Cooper et al. 2009; Marvin et al. 2002), Infant Massage (Field, 2019) and The Nurse Family Partnership (Olds et al. 2019).

### Theory, Assessment, Diagnosis and Culture

But, how do we interpret what we see in infant mental health assessment in order to reach a diagnosis and plan appropriate support and intervention? When we are observing caregiver-



infant interaction, for example, we find ourselves linking what we have found with what other people (theorists) have found. We may find our observations fit with theories. We may find that they do not. Each of us has theories about infant and early development that have been built up through our own experiences as children, our experiences with children, the theories of those with whom we have had contact, and the theories we have studied. All these theories in one way or another are used to help us to understand the meaning of the dynamic interactions between the child and the adult caregiver, which in turn can inform us about the impact of impaired relationships on the child's development. We use these theories to help us structure and interpret the meaning of the behaviors we have observed in the assessment setting.

The classic “grand” theories of Freud, Piaget, Erikson, Vygotsky, Bowlby, Winnicott, Fraiberg, Bronfenbrenner, Trevarthen, Brazelton, Lebovici, Greenspan, Stern, Emde, Fonagy and the more recent Brain Models, for example, each have played a role in shaping the theoretical framework for Infant Mental Health practitioners. Damasio (2010) has argued convincingly that adequate assessment of the child's developmental functioning must also be referenced to the neuroanatomical brain structures on which those functions depend. When it comes to understanding the difficulties infants experience, we believe that possessing the clearest possible understanding of the brain's contribution to “what is wrong?” and “why?” gives us a more in-depth picture of how to work toward overcoming the obstacles they face. It is the integration across domains – brain, development, and context - that characterize the practice of assessment and diagnosis in infant mental health. Understanding the neural basis of emotion—the “feeling,” or social, brain—is thus critical if we want to understand how children develop (Feldman, 2021; Nelson & Bosquet, 2000)

But, theories emerge in particular places at particular times and are therefore subject to

cultural assumptions and values. It is now acknowledged that that the majority of existing research on infant development and parenting – and our infant assessment techniques - spring from what has been referred to as a WEIRD (Western, educated, industrialized, rich, and democratic) cultural database, describing developmental constructs and processes in accordance with Western ideals (Heinrich, 2020). From a postmodern perspective, the dangers inherent in assuming that theories are ahistorical and value-free require that all theories be viewed as partial, context-specific, and potentially normative in their applicability. The socio-cultural context influences every aspect of human development, including how infant and early childhood mental health is understood, the expression of young children's development and attachment, adults' goals and expectations for young children's behavior and developmental milestones, and child-rearing practices used by parents and caregivers (Greenfield, 2018; Rogoff, 2003; Sarche et al. 2019).

The core of postmodernist thinking argues that rules, customs, beliefs, values and ideas must be subject to reanalysis, and a greater awareness must be placed on their context-dependent, subjective nature. This perspective begs the question which theories might be best to guide our assessment in infant mental health. It simply challenges us to reflect on the classic theories in the light of our own practical experience, so that we can decide how applicable each of them is to the children we work with and our own individual work contexts. But we also need to see the extent to which theories are supported by research evidence. It behooves us to explore the reasons underpinning our practice so that we become aware of our own assumptions, ideas or theories, and we can enhance them by reexamining the 'grand theories'. Practitioners can accept, adapt or reject any one 'grand theory' in question and use a range of theories, while recognising their limitations.

From a social justice and critical social science perspective, the importance of developing group or culture-specific assessments and questionnaires is a critical challenge facing Infant Mental Health practice. To understand the importance of culture, practitioners need to increase their awareness and understanding of the ways in which it is intertwined with power/oppression/exploitation and locate those processes within historical/social/political contexts. It is therefore critical in terms of our selection and use of conventional infant assessment tools to take account of the context-dependent nature of children's understandings. DSM-5 has added a new Cultural Formulation Interview to guide the clinician in gathering information from an individual or family member about the impact of culture on the clinical presentation and treatment needs of the client.

In sum, a postmodernist approach to assessment seeks to provide clinicians with a set of analytic tools (something like a theoretical toolbox) that they can use to view practices from different perspectives, providing alternative ways of seeing and understanding the same situation, while also assisting them to conceptualize what other practices might be possible. DC:0–5 embeds clinical diagnosis within context in the Diversity- Informed Tenets for Work With Infants, Children and Families. These Diversity-Informed Tenets are a set of 10 guiding principles that raise awareness of inequities embedded in society by empowering practitioners, organizations, and systems of care to identify, confront, and dismantle the systems of oppression intricately intertwined with all work with and on behalf of infants, children, and families (Norona et al, 2021).

Summary and Keypoints

The goal of mental health assessment is to make sense of a child's mental health symptoms and the associated factors that include the parent child relationship, the environmental context the child's physical and developmental status, acute and chronic stressors, and biological features. Understanding the interplay among these factors may begin with another logical framework, but the domain of classification must be integrated with within-person, relationship-based, and environmental (including family, neighborhood, culture) approaches to understanding the risk for, emergence of, and persistence of impairing emotional, behavioral, and developmental symptoms in disorders of early childhood (Egger and Emde, 2011). An infant mental health approach to assessment incorporates a developmental, relational, and biological perspective on the presenting symptoms and includes data collected from interviews, observation of dyadic or triadic interactions, as well scores on validated screening tools. Assessment is the start not the end of the process, so that the results of assessments can be used to determine the best level of care, the right services and help point to the needs of the child.

In sum, IMH assessment and intervention should occur within a relational framework in which the IMH clinician establishes an open, trusting relationship with the caregiver and infant (Zeanah and Lieberman, 2016). Developing a partnership with family members is therefore an essential element in the assessment-diagnosis process, given that infants and toddlers are unable to provide information of their own difficulties. The development of these relationships begins with the clinician's reflective stance: a stance of curiosity, openness, willingness to listen, and acceptance of differences and uncertainty.

As we look towards the future, we need to

- Expand early screening for infants and toddlers to detect mental health issues, such as relationship disorders, depression and self-regulation problems.
- Train professionals in mental health, pediatrics, early childhood education, child welfare and other related professions to recognize risk factors, and ensure that undergraduate, graduate and continuing professional education include content on infant mental health.
- Support Obstetrics and Pediatrics Departments to screen for health-related social needs, such as financial insecurity or intimate partner violence, to identify risk factors that may precipitate or exacerbate mental health conditions.
- Develop group or culture-specific assessments and questionnaires.
- Integrate infant mental health consultations into programs for parents, childcare, early education, well-child health services and home-based services.

## References

- Abidin, R. R. (1995). *Parenting Stress Index. Professional Manual* (3rd ed.). Psychological Assessment Resources.
- Alfonso, V., Rentz, EA., Suehee (2010). Review of the Battelle Developmental Inventory, Second Edition. *Journal of Early Childhood and Infant Psychology*; New York. Vol. 6, 21-40.
- Als H, Lester BM, Tronick EZ, Brazelton TB. (1982). Towards a research instrument for the assessment of preterm infants' behavior. In: Fitzgerald HE, Lester BM, Yogman MW, editors. *Theory and research in behavioral pediatrics*. New York: Plenum Press; pp. 35–63.
- Als, H., Duffy, F. H., McAnulty, G., Butler, S. C., Lightbody, L., Kosta, S. et al. (2012). NIDCAP improves brain function and structure in preterm infants with severe intrauterine growth restriction. *Journal of Perinatology*, 32(10), 797–803. <https://doi.org/10.1038/jp.2011.201>

- Barlow, J. & Schrader McMillan, A. (2010) *Safeguarding children from emotional maltreatment: what works*. Jessica Kingsley, London, UK. ISBN 9781849050531
- Barnard, K.E. (1994) What the NCAST Feeding Scale Measures in G. Sumner & A. Spietz (Eds.) *NCAST Caregiver/Child Feeding Manual*. Seattle: NCAST Publications, Washington.
- Bayley, N. (2006). *Bayley Scales of Infant and Toddler development* (3rd ed.). Technical manual. Pearson and Psychological Cooperation.
- Biringen, Z., Robinson, J. L & Emde, R. N. (2000). Appendix A: the Emotional Availability Scales. 2nd ed. *Attachment & Human Development*, 2 (2), 251-255.
- Bornstein, M. H. (2015). Children's parents. In M. H. Bornstein, T. Leventhal, & R. M. Lerner (Eds.), *Handbook of child psychology and developmental science: Ecological settings and processes* (pp. 55–132). John Wiley & Sons, Inc..
- Brandt, K., (2014). Core Concepts in Infant-Family and Early Childhood Mental Health in K. Brandt, Perry, B., Seligman, S., Tronick, E. (Eds.) *Infant and Early Childhood Mental Health*. Washington, DC., American Psychiatric Publishing
- Brazelton, T. Berry (1994). *Touchpoints: Your child's emotional and behavior development*. Cambridge, MA: Da Capo Press.
- Brazelton, T. B. & Nugent, J. K. (2011). *Neonatal Behavioral Assessment Scale*, London: McKeith/Blackwell Press.
- Briggs-Gowan MJ, Carter AS, Irwin JR, Wachtel K, Cicchetti DV (2004). The Brief Infant-Toddler Social and Emotional Assessment: screening for social-emotional problems and delays in competence. *J Pediatr Psychol*. 29(2):143-55. doi: 10.1093/jpepsy/jsh017. PMID: 15096535.

- Bruschweiler-Stern, Nadia (2009). Moments of meeting: Pivotal moments in mother, infant, father bonding. In *The newborn as a person*. New Jersey: John Wiley & Sons, J Kevin Nugent, Bonnie Petrauskas and T Berry Brazelton (Eds.) 70-84. Hoboken, NJ: John Wiley and Sons.
- Carter AS, Briggs-Gowan MJ, Jones SM, Little TD (2003). The Infant-Toddler Social and Emotional Assessment (ITSEA): factor structure, reliability, and validity. *J Abnorm Child Psychol*. 2003 Oct;31(5):495-514. doi: 10.1023/a:1025449031360. PMID: 14561058.
- Ceballos M. (2011). Simulating the effects of acculturation and return migration on the maternal and infant health of Mexican immigrants in the United States: a research note. *Demography*. 2011;48(2):425– 36.
- Clark, R. (1999). The Parent-Child Early Relational Assessment: A factorial validity study. *Educational and Psychological Measurement*, 59, 821–846.
- Cooper, G., Hoffman, K. T., and Powell, B. (2009). *Circle of Security: COS-P Facilitator DVD Manual 5.0*. Spokane, WA: Marycliff Institute.
- Costa, G., Noroña, C.R. (2019). The Art and Science of Obtaining a History in Infant and Early Childhood Mental Health Assessment. In: Frankel, K., Harrison, J., Njoroge, W. (eds) *Clinical Guide to Psychiatric Assessment of Infants and Young Children*. Springer, Cham.  
[https://doi.org/10.1007/978-3-030-10635-5\\_2](https://doi.org/10.1007/978-3-030-10635-5_2)
- Cox, J., Holden, J., & Henshaw, C. (2014). *Perinatal mental health: The Edinburgh Postnatal Depression Scale (EPDS) manual (2nd Ed.)*. RCPsych publications.
- Crittenden, P. M. (1979–2004). *CARE Index: Coding manual*. Unpublished manuscript. Miami, FL. Available from the author.
- Damasio, A. R. (2010). *Self Comes to Mind: Constructing the Conscious Brain*. New York, NY: Pantheon.

Davis, A. E., Vivrette, R., Carter, T., Eberhardt, C., Edwards, S., Connors, K., & Reavis, K. (2022). Impact of an approach to integrated care for young children in low-income urban settings: Perspectives of primary care clinicians. *Clinical Practice in Pediatric Psychology*, *10*(2), 128–138. <https://doi.org/10.1037/cpp0000393>

Dubowitz, L., Ricciw, D., Mercuri, E. (2005). The Dubowitz neurological examination of the full-term newborn. *Ment Retard Dev Disabil Res Rev*, *11* (2005), pp. 52-60

Egger, H. L., & Emde, R. N. (2011). Developmentally sensitive diagnostic criteria for mental health disorders in early childhood: The diagnostic and statistical manual of mental disorders—IV, the research diagnostic criteria—preschool age, and the Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood—Revised. *American Psychologist*, *66*(2), 95–106. <https://doi.org/10.1037/a0021026>

Emde, R. N. (2016). Building a solid platform for the diagnostic classification of mental health and developmental disorders of infancy and early childhood (DC: 0–5). *Infant Mental Health Journal*, *37*(5), 521–522. <https://doi.org/10.1002/imhj.21594>

Field, T. (2019). Pediatric Massage Therapy Research: A Narrative Review. *Children*, *6*(6), 78; <https://doi.org/10.3390/children6060078>

Henrich, J. (2020). *The WEIRDest People in the World*. Farrar, Straus & Giroux, New York.

Feldman, R. (2021). The neurobiology of affiliation: Maternal-infant bonding to life within social groups. *Encyclopedia of Behavioral Neuroscience*, 2nd Edition. Elsevier.

Felitti, V.J, Anda, R.F. (2009). The Relationship of Adverse Childhood Experiences to Adult Medical Disease, Psychiatric Disorders, and Sexual Behavior: Implications for Healthcare. In



- Fonagy, P., Sleded, M., & Baradon, T. (2016). Randomized controlled trial of parent–infant psychotherapy for parents with mental health problems and young infants. *Infant Mental Health Journal*, 37(2), 97–114. <https://doi.org/10.1002/imhj.21553>
- Ghosh-Ippen, C., Noroña, C. R., & Lieberman, A. (2014). Clinical considerations for conducting child-parent psychotherapy with young children with developmental disabilities who have experienced trauma. *Pragmatic Case Studies in Psychotherapy*, 10(3), 196–211.
- Gilkerson, L., Hofherr, J., Heffron M. C., Sims, J. M., Jalowiec B., Bromberg, S. R., & Paul, J. J. (2012). Implementing Fussy Baby Network Approach. *Zero to Three*, 33 (2) (2012), pp. 59-65 <https://doi.org/10.1016/j.jpeds.2018.08.084>
- Graça, M. (2017). Good early development — the right of every child. *Lancet*, 389, 13–14.
- Greenfield, P. M. (2018). Studying social change, culture, and human development: A theoretical framework and methodological guidelines. *Developmental Review*, 50, 16-30.
- Guedeney, A., Matthey, S., & Puura, K. (2013). Social withdrawal behavior in infancy: a history of the concept and a review of published studies using the Alarm Distress baby scale. *Infant Mental Health Journal*, 34(6), 516-531.
- Guedeney, A., & Fermanian, J. (2001). A validity and reliability study of assessment and screening for sustained withdrawal reaction in infancy: The alarm distress baby scale. *Infant Mental Health Journal*, 22(5), 559–575. <https://doi.org/10.1002/imhj.1018>
- Guedeney, A., Matthey, S., & Puura, K. (2013). Social withdrawal behavior in infancy: A history of the concept and a review of published studies using the alarm distress baby scale. *Infant Mental Health Journal*, 34(6), 516–531. <https://doi.org/10.1002/imhj.21412>
- Hutchon B, Gibbs D, Harniess P, Jary S, Crossley SL, Moffat JV, Basu N, Basu AP. (2019). Early intervention programmes for infants at high risk of atypical neurodevelopmental outcome.

*Dev Med Child Neurol.* 61(12):1362-1367. doi: 10.1111/dmcn.14187. Epub 2019 Mar 4. PMID: 30828797.

Kristensen IH, Juul S, Kronborg H. What are the effects of supporting early parenting by newborn behavioral observations (NBO)? A cluster randomised trial. *BMC Psychol.* 2020 Oct 16;8(1):107. doi: 10.1186/s40359-020-00467-5. PMID: 33076981; PMCID: PMC7574292.

Lester BM, Tronick EZ. (2004). History and description of the Neonatal Intensive Care Unit Network Neurobehavioral Scale. *Pediatrics.* 2004 Mar;113(3 Pt 2):634-40. PMID: 14993523.

Lieberman, A. F., & Van Horn, P. (2008). *Psychotherapy with infants and young children: Repairing the effects of stress and trauma on early attachment.* The Guilford Press.

Luoma I, Tamminen T, Kaukonen P, Laippala P, Puura K, Salmelin R, Almqvist F. (2001). Longitudinal study of maternal depressive symptoms and child well-being. *J Am Acad Child Adolesc Psychiatry.* 2001 Dec;40(12):1367-74. doi: 10.1097/00004583-200112000-00006.

Lu, M. C., Kotelchuck, M., Hogan, V., Jones, L., Wright, K., & Halfon, N. (2010). Closing the Black-White gap in birth outcomes: A life-course approach. *Ethnicity & Disease, 20*(1 Suppl 2), S2–76.

Lyons-Ruth K, Todd Manly J, Von Klitzing K, Tamminen T, Emde R, Fitzgerald H, Paul C, Keren M, Berg A, Foley M, Watanabe H. (2017). The worldwide burden of infant mental and emotional disorder: report of the task force of the World Association for Infant Mental Health. *Infant Ment Health J.* 38(6):695-705. doi: 10.1002/imhj.21674. Epub 2017 Oct 31. PMID: 29088514.

Marvin, R., Cooper, G., Hoffman, K., and Powell, B. (2002). The circle of security project: attachment-based intervention with caregiver-pre-school child dyads. *Attach. Hum. Dev.* 4, 107–124. doi: 10.1080/14616730252982491

McCoy, D.C., Peet, E.D., Ezzati, M., Danaei, G., Black, M.M., Sudfeld, C.R., Fawzi, W., Fink, G. (2016). Early childhood developmental status in low- and middle-income countries: national, regional, and global prevalence estimates using predictive modeling. *PLoS Med.* 13, e1002034, <http://dx.doi.org/10.1371/journal.pmed.1002034>.

McManus, B., Blanchard, Y., Murphy, N., Nugent, J. K. (2020). The effects of the Newborn Behavioral Observations (NBO) system in Early Intervention: a multisite, randomized controlled trial. *Infant Mental Health Journal*, 41, 6, 757-769: <https://onlinelibrary.wiley.com/doi/10.1002/imhj.21882>

Nelson, C.A. Bosquet, M. (2000). Neurobiology of Fetal and Infant Development : Implications for Infant Mental Health in Zeanah, C.H. (Ed) (2000). *Handbook of Infant Mental Health*. New York: The Guilford Press, 37-59.

Nicolson S, Carron SP, Paul C. (2022). Supporting early infant relationships and reducing maternal distress with the Newborn Behavioral Observations: A randomized controlled effectiveness trial. *Infant Ment Health J.* 43(3):455-473. doi: 10.1002/imhj.21987. Epub 2022 May 9. PMID: 35531961; PMCID: PMC9324818.

Noroña, C. R., Lakatos, P. P., Wise-Kriplani, M., & Williams, M. E. (2021). Critical self-reflection and diversity-informed supervision/consultation: Deepening the DC:0–5 cultural formulation. *ZERO TO THREE Journal*, 42(2), 62–71.

Nugent, J. K., Keefer, C., Minear, S., Johnson, L., & Blanchard, Y. (2007). *Understanding newborn behavior and early relationships: The Newborn Behavioral Observations (NBO) system handbook*. Paul H Brookes Publishing.

- Nugent, J. K., Dym-Bartlett, J., Vonende, A. (2017). The Effects of the Newborn Behavioral Observations (NBO) system on Sensitivity in Mother-Infant Interactions. *Infants and Young Children*. 30, 4, 257-268.
- Nugent, J.K. (1995). Cross-cultural research in child development: Implications for clinicians. *Zero to Three*, 15, 2, 1-8.
- Nugent, J. K. (2015). The Newborn Behavioral Observations (NBO) System as a Form of Intervention and Support for New Parents. *Zero to Three Journal*, 36, 1, 2-10.
- Nugent, J.K., & Brazelton, T.B. (1989). Preventative intervention with infants and families: the NBAS model. *Infant Mental Health Journal*, 10 (2), 84-99.
- Nugent, J. K., Dym-Bartlett, J., Valim, C. (2014). Effects of an infant-focused relationship-based hospital and home visiting intervention on reducing symptoms of postpartum maternal depression: A pilot study. *Infants & Young Children*, 27(4), 292–304.
- Olds, DL., Kitzman, H., Anson, E., Smith, JA., Knudtson, MD., Miller, T., Cole, R., Hopfer, C., Conti, G. (2019). Prenatal and infancy home visiting effects on mothers: 18-year follow-up of a randomized trial. *Pediatrics*. 2019; 144 (6) e20183889
- Osofsky JD, Lieberman AF. (2011). A call for integrating a mental health perspective into systems of care for abused and neglected infants and young children. *Am Psychol*. 66(2):120-8. doi: 10.1037/a0021630. PMID: 21142335.
- Prechtl HF. (2001). General movement assessment as a method of developmental neurology: new paradigms and their consequences. The 1999 Ronnie MacKeith lecture. *Dev Med Child Neurol*. 43(12):836- 42.
- Puura, K., Malek, E., & Berg, A. (2018). Integrating Infant Mental Health at Primary Health Care Level. *Perspectives in Infant Mental Health*, 26(2-3), 4-6.

- Puura, K., Mäntymaa, M., Luoma, I., Kaukonen, P., Guedeney, A., Salmelin, R. & Tamminen, T. (2010). Infants' Social Withdrawal Symptoms Assessed with a Direct Infant Observation Method in Primary Health Care. *Infant Behavior and Development*, 33 (4), 579-588.
- Puura, K., Guedeney, A., Mäntymaa, M. & Tamminen, T. (2007). Detecting Infants in Need: Are Complicated Measures Really Necessary? *Infant Mental Health Journal*, 28 (4), 409-421.
- Puura, K., Mäntymaa, M., Leppänen, J., Peltola, M., Salmelin, R., Luoma, I., Latva, R., & Tamminen, T. (2013). Associations between maternal interaction behavior, maternal perception of infant temperament, and infant social withdrawal. *Infant Mental Health Journal*, 34(6), 586–593. <https://doi.org/10.1002/imhj.21417>
- Puura, K., Mäntymaa, M., Luoma, I., Kaukonen, P., Guedeney, A., Salmelin, R., & Tamminen, T. (2010). Infants' social withdrawal symptoms assessed with a direct infant observation method in primary health care. *Infant Behavior & Development*, 33(4), 579–588. <https://doi.org/10.1016/j.infbeh.2010.07.009>
- Redshaw, M. (2022) Starting with the baby: putting the newborn at the centre of the transition to parenthood, *Journal of Reproductive and Infant Psychology*, 40:6, 547-549, DOI: [10.1080/02646838.2022.2131713](https://doi.org/10.1080/02646838.2022.2131713)
- Rogoff, B. (2003). *The cultural nature of human development*. Oxford University Press
- Salo, F.T., & Paul, C. (2007). Some principles of infant-parent psychotherapy. In F. T. Salo & C. Paul (Eds.), *The baby as subject* (2nd ed., pp. 247–259). Melbourne: Stonnington Press.
- Sameroff, A. (2000). Ecological perspectives on developmental risk. in Osofsky, J. D. Fitzgerald, H. E. (Eds) *WAIMH Handbook of Infant Mental Health*. Vol. 2: Early Intervention, Evaluation, and Assessment. New York: John Wiley & Sons; 4-33

Sarche, M., Tsethlikai, M., Godoy, L., Emde, R., & Fleming, C. M. (2019). Cultural perspectives for assessing infants and young children. In R. DelCarmen-Wiggins & A. S. Carter (Eds.), *The Oxford handbook of infant, toddler, and preschool mental health assessment* (pp. 9–28). Oxford University Press.

Shonkoff, J. (2014). A healthy start before and after birth: Applying the biology of adversity to build the capabilities of caregivers. In K. McCartney, H., Yoshikawa, & L. B. Forcier (Eds.), *Improving the Odds for America's Children* (pp. 28-39). Harvard Education Press.

Singer, JM and Hornstein, J. (2010). The Touchpoints Approach to the Training of Early Care and Education Providers. In Lester, BM and Sparrow, JD (Eds). *Nurturing Children and Families: Building on the Legacy of T. Berry Brazelton*. Wiley-Blackwell. Malden, MA.

Slade, A., Holland, M. L., Ordway, M. R., Carlson, E. A., Jeon, S., Close, N., Mayes, L. C., & Sadler, L. S. (2020). Minding the Baby®: Enhancing parental reflective functioning and infant attachment in an attachment-based, interdisciplinary home visiting program. *Development and Psychopathology*, 32(1), 123–137. <https://doi.org/10.1017/s0954579418001463>

Squires, J., Bricker, D., & Twombly, E. (2001). *The ASQ:SE users guide: for the Ages & Stages Questionnaires, Social-Emotional, a parent-completed, child-monitoring system for social-emotional behaviors*. Brookes Publishing Co.

Sroufe, L. A. (2021). The legacy of the first 3 years. *ZERO TO THREE Journal*, 41(3), 5–9.

Stern, D. (1995). *The motherhood constellation: A unified view of parent-infant psychotherapy*: Karnac books

The Alliance for Child Protection in Humanitarian Action. (2021). *Defining and measuring child well-being in humanitarian action: A contextualization guide*.

[https://www.alliancecpha.org/en/system/tdf/library/attachments/cpha002 - child well-being contextualisation guide v6\\_1.pdf?file=1&type=node&id=42528](https://www.alliancecpha.org/en/system/tdf/library/attachments/cpha002_-_child_well-being_contextualisation_guide_v6_1.pdf?file=1&type=node&id=42528)

Tronick E, Lester BM. (2013). Grandchild of the NBAS: the NICU network neurobehavioral scale (NNNS): a review of the research using the NNNS. *J Child Adolesc Psychiatr Nurs.* 26(3):193-203. doi: 10.1111/jcap.12042. PMID: 23909942; PMCID: PMC3839620

Wilkinson, A., Laurore, J., Maxfield, E., Gross, E., Daily, S., & Keating, K. (2021). Racism creates inequities in maternal and child health, even before birth. *Child Trends.* <https://www.childtrends.org/publications/racism-creates-inequities-maternal-child-health-even-before-birth>

Zeanah, C. H., Carter, A. S., Cohen, J., Egger, H., Gleason, M. M., Keren, M., Lieberman, A., Mulrooney, K., & Oser, C. (2016). Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood DC:0–5: Selective reviews from a nosology for early childhood psychopathology. *Infant Mental Health Journal*, 37(5), 471–475. <https://doi.org/10.1002/imhj.21591>

Zeanah, C. H., & Lieberman, A. (2016). Defining a relational pathology in early childhood: The Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood DC:0–5 approach. *Infant Mental Health Journal*, 37(5), 509–520. <https://doi.org/10.1002/imhj.21590>

Zeanah, C. H., Jr., & Zeanah, P. D. (2009). The scope of infant mental health. In C. H. Zeanah, Jr. (Ed.), *Handbook of infant mental health* (pp. 5–21). The Guilford Press.

ZERO TO THREE. (2016). DC:0–5™: Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood. ZERO TO THREE.