The Newborn Period – where hope and happiness meet

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António Lobo Antunes - arguably Portugal's finest novelist - discovered his literary vocation while he was fulfilling his military service in Angola during the war of independence in the early 1970s. Trained as a doctor, he was called on to treat the injured and the dying in his makeshift blood-smeared infirmary on the front lines for over two years. The experience filled him with a mixture of horror, sadness and despair. In one of his short stories, Lobo Antunes recalls a particular day when, in the midst of all this suffering and death, he had to deliver a baby. He had spent hours struggling to keep the mother alive and help deliver her baby. Finally, he tells the reader, he emerged into the daylight - "holding in my hands a small tremulous life," while mango trees rustled overhead and a family of mandrills looked on. At such moments, he says, he came "closest to what is commonly known as happiness."

What Lobo Antunes so poignantly describes in his narrative is how the birth of a baby can offer hope and the possibility of happiness - even in a world that is soaked in sadness and despair. His story illustrates how even the very sight of a new baby draws out feelings of warmth and love, so deep and profound that its intensity surprises parents and often catches the professional who comes in contact with the baby unawares. This may be because the newborn baby represents hope for the future, and offers parents the chance of a psychological rebirth for themselves. The inherent capacity of the baby to motivate caretaking behavior in the human, which has the evolutionary function of enhancing offspring survival, is a key concept in our approach to early intervention work with new parents.

Sometimes, however, the celebration of new life may be overshadowed by a parent's anxiety, sadness even despair – as in the case of the parent of a very preterm low birthweight baby who is placed in intensive care, or the immigrant mother having her first baby, separated from kith and kin, or the mother who is suffering from postpartum depression, or the mother giving birth in homeless shelter or the case of the family without adequate health care or the parents of a baby with an established disability (Als et al. 2003; Bruschweiler-Stern, 1997; Barnard and Sumner, 2002; Blanchard, 2009; Carter et al. 2005; Kennell, Kennell and Klaus, 1995; Kennell and Klaus, 1998; Kennell, 2009). In some cases, especially with babies who are very sick, mothers may experience anticipatory grieving, and begin to mourn the loss of their infants. The threat to the child's survival and invasive medical procedures can also be traumatic for the parents. While much of this research has been done with mothers, recent studies have found that fathers are not immune to traumatic-stress reactions following a preterm delivery (Shaw et al. 2006). In these at-risk settings, hope and happiness are in the balance so that providing supportive "hope-giving" intervention to parents is critical for the baby's future health and development and for the parents' own sense of happiness. We believe this can best be done by highlighting the baby's strengths and individuality, even in the face of serious health and developmental challenges.

There is now strong evidence to suggest that early intervention can prevent the compounding of problems, which occur when the caregiving environment is unable to adjust adequately to meet the needs of the infant (Als et al. 2003; Barnard and Sumner, 2002;

Brown and Talmi, 2005; Bruschweiler-Stern, 2009; Damon and Lerner, 2008; Lester and Sparrow, 2010; Lawhon, 1997; Lyons-Ruth et al. 2003; McAnulty et al. 2013; Nugent and Brazelton, 2000; Nugent, Blanchard & Stewart, 2007; Nugent, Petrauskas, Brazelton, 2009; Osofsky & Thompson, 2000; Sameroff, 2010). In this chapter, I will propose that the newborn period and the first months of life present perinatal professionals with a unique opportunity to intervene and to support families, especially under conditions of environmental stress. Then, I will go on to describe the use of the Newborn Behavioral Observations (NBO) system, which is an individualized infant-focused but family-centered approach, designed to promote a positive relationship between infant and parents beginning in the newborn period (Nugent, Keefer, Minear, Johnson & Blanchard, 2007). But, first, let us discuss what we have learned about the newborn and about the developmental challenges facing the newborn infant and parents over the first months of life and the opportunities these may present for intervention.

The newborn period and the development of early relationships

The newborn period makes up a very short phase compared with the whole life span, or even with the stage of infancy, but this short period involves a pivotal, life-changing transition in the life of the child, in the development of the parent-child relationship and in the life of the family itself (Brazelton, 2009; Bruschweiler-Stern, 2009; Klaus et al. 1995; Stern, 1985, 1995; Trevarthen, 2003, 2004; Tronick, 2003, 2007). There is now general agreement that the period from birth to the beginning of the third month of life, involves not only a major transformation in many neural functions (Als et al. 2004) and is a major stage in the infant's behavioral adaptation to his/her new environment but also constitutes a major transition stage in the development of the parent-infant relationship (Emde and Robinson, 1979; Sander et al. 1979). At this stage the earliest patterns of interaction are taking shape, as infant and parent are in a heightened state of readiness to exchange their first communication signals in their efforts to achieve a mutually satisfying level of affective mutual regulation, what Stern (1985) refers to as "affective attunement". During this period, the infant is developing the capacity for shared attentiveness so that both parent and infant have already embarked on and are actively engaged in an interactive regulative system (Sander et al., 1979,Tronick, 2003). While it can be argued, as Stern does, that basic clinically relevant issues such as self-regulation, trust, attachment, and individuation are life course issues, the assumption on which our approach to preventative intervention is based is that these issues are being actively negotiated by the infant from the very beginning.

The Social Newborn

Our work with Neonatal Behavioral Assessment Scale (NBAS) makes it clear that biology has programmed the newborn to be a pro-social organism that actively seeks contact with the physical and social world (Brazelton, 1973, 1984; Brazelton and Nugent, 1995, 2011). This readiness to engage and connect with her caregivers is made possible by a rich behavioral repertoire that is present at birth (Als, 1982; Gomes-Pedro, 2009; Trevarthen, 2003;Tronick, 2003, 2007; Walton et al. 1997). Several studies confirm the bidirectional nature of development while studies with the NBAS have expanded our understanding of the range of variability in newborn behavior patterns and the diversity of child rearing practices and belief systems.

Newborns are ready and able to engage in face-to-face, eye-to-eye mutual exchange – even if it is for very brief periods. They possess a wide range of visual, auditory and perceptual abilities that enable them to explore the world around them (Farroni et al. 2004). It is clear that babies can see, but we now know that they seem to be drawn to the human face more than anything else and that infants can even distinguish a happy from a sad expression (Walton et al. 1997). The newborn's hearing is so fine-tuned that she can detect a missing beat in a musical pattern and more importantly, perhaps, can already recognize the sound of her mother's voice (Fifer and Moon, 1994). Babies also have a well-developed sense of taste at birth and can even recognize their mother's smell (Porter and Winberg, 1999). And because the sensory cortex is the most developed at birth, babies' sensitivity to touch is exquisitely developed at this time (Field, 2001).

But, simply listing these discrete abilities does not do justice to the full richness of the baby's repertoire – it is the baby's capacity to organize and integrate all these competencies in such a coherent, even purposeful way that reveals his very personhood, his uniqueness, his individuality (Brazelton, 1973; Brazelton and Nugent, 1995, 2011; Brazelton, 2009). Taken together, these remarkable capacities enable the infant to face the major developmental tasks that lie ahead, namely the development of a bond of attachment between the child and his caregiver. Let us now take a closer look at the developmental challenges facing newborns and ask how we can we use this information to give parents the kind of individualized support they need during this critical life transition.

The Developmental challenges facing newborn infants: AMOR

Over the first few months of life, newborns face a series of tasks, in self-regulation that are in some ways similar to stages (Als, 1982; Als et al. 2003; Lawhon, 1997; Nugent et al., 2007). From this developmental perspective, the newborn infant is seen to confront a series of hierarchically organised challenges as he/she attempts to adapt to his/her new extrauterine world, both the inanimate and animate world. This includes the infant's capacity to first regulate his/her physiological or autonomic system, then his/her state behavior, his/her motor behavior and finally his/her affective interactive behavior, which develop in a stage-like epigenetic progression over the first two to three months of life.

The first developmental task for the newborn is to organize his or her autonomic, or physiological, behavior. It involves the tasks of stabilizing breathing, reducing the number of startles and tremors, and being able to maintain temperature control. When this adjustment has been achieved, the newborn can move on to the second task: regulating motor behavior. This means gaining control over random motor movements, developing good muscle tone and control, and reducing excessive motor activity. The third task is state regulation. State regulation includes the ability to develop strong and predictable sleep and wake states, as well as what could be called sleep protection, or the ability to screen out negative stimuli, such as noise, while asleep. State control also means that the infant is able to deal with stress, either by crying to gain the caregiver's help or engaging in such self-comforting behaviors as placing a hand in the mouth. The final developmental task for the newborn is the regulation of attentional-interactive, or social, behavior. This involves the capacity to maintain prolonged alert periods, to attend to visual and auditory stimuli, and to seek out and engage in social interaction with the caregiver. These tasks are summarized with

the acronym AMOR, for autonomic, motor, organization of state, and responsivity, as shown in this table.

Challenges Facing the Newborn: AMOR

Autonomic/physiological stability—stabilization of breathing, temperature regulation, reducing tremors and startles, etc.
Motor regulation—development of good motor control and feeding skills; ability to maintain a controlled activity level
Organization of state—ability to cope with stress; able to regulate state and develop predictable sleep-wake patterns
Responsiveness—development of a growing awareness of the environment and the capacity to process visual and social information and engage in social interaction)

Source: Based on Nugent et al, 2007.

As the process of self-regulation proceeds over the first weeks and months of life, the infant is able to prolong her periods of alertness and social availability. This is a special period of developmental change and reorganization in the patterns of infant attention and emotion during this period (Barr, 1998; Brazelton, 2009; Emde & Robinson, 1979; Trevarthen, 2004; Tronick, 2003). In general, simple attention seems to dominate face-to-face interactions during the first weeks of life. Then, during the second month, infants show a wide range of facial expressions and emotional responses, from interest, to concentration, to astonishment and pleasure. The earlier simple gaze is now accompanied by more active positive emotional expressions, by expressions of effortful concentration, by smiling, and often by motor excitement such as animated arm waving (Farroni et al. 2004). As the infant adapts to his new extrauterine environment, his capacity for relatedness is being refined and consolidated. By the third month, smiles and cooing increase in duration as smiles become more open and cooing more playful. This more active pattern of attention is accompanied by excitement during face-to-face interactions (Trevarthen, 2003). Now the stage is set for the infant to develop the capacity for shared mutual engagement, described by Tronick in the Mutual Regulation Model (Tronick, 2007). The focus of our approach to intervention, therefore, is to support parents in their efforts to help the infant regulate and integrate her autonomic, motor, state and affective systems and thus consolidate her affective interactive capacities so that she is ready for the next stage, when face-to-face interaction provides the primary clinical window.

The Newborn Behavioral Observations (NBO) system and intervention

As we have seen, the newborn period and the first months of life is a major transition period in the life of the child, in the life of the parents and in the life of the family. This period has been called the intervention touchpoint par excellence, not only because this stage comes first in time in the infant's life, but also because it is a time when both infant and parents seem to be in a state of optimal availability for exploratory interaction and mutual exchange (Als, 1983, Brazelton, 2009; Blanchard, 2009; Bruschweiler-Stern, 2009; Gomes-Pedro, 2009;

Klaus, Kennell and Klaus, 1995; Nugent & Brazelton, 2000; Stern, 1985,1995; Trevarthen 2001, 2003; Tronick, 2003, 2007). We developed the Newborn Behavioral Observations (NBO) system to help parents become more aware of and avail of their baby's rich behavioral repertoire and thus promote the bond between parents and their infants during this sensitive period (Nugent, Keefer, Minear, Johnson & Blanchard, 2007).

The Newborn Behavioral Observations (NBO) system – which was inspired by our work with Berry Brazelton's Neonatal Behavioral Assessment Scale (NBAS) (Brazelton, 1973, 1985; Brazelton and Nugent, 1995, 2011) - consists of 18 neurobehavioral observations, which capture the baby's autonomic, motor, state, and social interactive behaviors in a way that is highly individualized. The NBO describes the newborn's capacities and behavioral adaptation from birth to the third month of life and is based on the assumption that the developmental challenges facing the newborn center on the process of self-regulation and mutual regulation. It is designed to help the clinician and parent together, to observe the infant's self-regulation efforts and identify the kind of support the infant needs for his successful growth and development and thus strengthen parents' confidence, and practical skills in caring for their children. The focus of the NBO is on relationship-building rather than on assessment per se and so that we hope it meets the needs of pediatric professionals who strive for a more relational or family-centered model of care to replace the traditional pathology-seeking biomedical model of care.

The 18 NBO items include observations of the infant's capacity to habituate to external light and sound stimuli (sleep protection); the quality of motor tone and activity level; capacity for self-regulation (including crying and consolability);
response to stress (indices of the infant's threshold for stimulation),;visual, auditory and social-interactive capacities (degree of alertness and response to both human and non-human stimuli).

The NBO session begins with a brief observation of the baby's initial state, as the clinician invites the parents to focus on the baby's behavior and at the same time, attempts to create an open, warm, non-judgmental and non-threatening atmosphere. For that reason, clinicians generally inform parents at this stage, that the NBO is not an assessment but rather a set of shared observations.

If the baby is asleep, the clinician then administers the light and sound stimuli to observe the infant's capacity for habituation and discuss the implications of the baby's response for caregiving. The clinician then elicits motor behaviors such as hand-grasp, sucking and rooting and crawling reflexes, motor tone and activity level, followed by observations of the infant's capacity to respond to animate and inanimate visual and auditory stimuli. During the session, the clinician and the parents together continue to formulate caregiving strategies or handling techniques based on their observations of the baby's behavior, in terms of the level of stimulation that is appropriate for and meets the needs of this baby. If the infant cries, the amount of crying and the ease or difficulty of consolability is recorded, while the infant's overall state regulation and response to stress is examined. All the while, particular attention is paid to the infant's threshold levels and what level of stimulation may be overstimulating and stressful.

The infant can only achieve an integrated level of AMOR functioning – autonomic, motor, organization of state and responsiveness - if the appropriate individualised amor or nurturance is provided by the parents. This is because the infant's developmental agenda and the baby's capacity to protect her sleep and develop predictable sleep-wake states, her ability to cope with stress and the capacity to respond to her environment can only be achieved with the support of the parent or caregiver. The goal of the NBO is to create 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, crying, in addition to identifying the kind of interaction that is best suited to the infant's behavioral threshold and style. Management of crying and sleep are two of the most overwhelming concerns of parents in these early months (Barr 1990; Wolke et al. 1994) so that the NBO can be used as a tool in providing guidance to parents, on the most appropriate ways to manage sleep and crying behavior, in a way that is responsive to their individual baby's needs. While the infant - the infant's behavior - is at the center of the interactive session, the NBO is designed to help the clinician and caregiver together to identify where the infant needs support and how they can provide this support. By providing this behavioral profile of the infant's strengths and challenges, the NBO can provide clinicians with the kind of individualized guidance that can help parents meet their baby's needs. This, in turn, will help the parents develop the kind of confidence they need to support their baby's development and enjoy the experience of being a new parent.

The NBO is inherently interactive and family-centered, so that parents are involved as partners in the NBO session. The clinician maintains a collaborative stance towards the parents during the session, which ends with the clinician and parents developing a joint infant caregiving plan by identifying techniques most likely to foster positive parent-infant interaction. The parent's own observations are always integrated into the session, and parents are invited to elicit many of the infant's behaviors. For example, the clinician asks parents to elicit the baby's response to their voice, or to identify the best way to soothe the infant when upset.
While the NBO attempts to reveal the full richness of the newborns behavioral repertoire, the clinical focus is on the infant's individuality, on the aspects of behavior that make the baby unique and different. In other words, it provides the baby with a "voice", with a "signature". It gives the baby an opportunity to tell the caregiver who he or she is, what her preferences are and what her vulnerabilities might be and in what areas she may need support. Thus, it is the capacity of the infant – in all his richness - to change and transform all who come into his orbit that is at the heart of our clinical approach to our working with families. The NBO describes the infant's capacities so that the parents can better appreciate their baby's unique competencies and vulnerabilities and thereby understand and respond to their baby, in a way that meets her/his developmental needs. Although the NBO session involves the systematic observation and interpretation of the newborn's communication cues, it must be pointed out that the baby's behavior is never objective data in the sense that it stands on its own and is self-explanatory. While it may be interpreted by the clinician, the clinician must be aware of the mother's psychic processes and should recognize that her representations of herself and of her baby will shape her understanding of the baby's behavior during the NBO session (Birss, 2007, Bruschweiler-Stern, 2009).

In sum, the NBO was designed as a relationship-building tool that can be flexibly administered and offers individualized information to parents about their baby's

communication strategies. It is designed to promote a positive bond between parent and child and between the clinician and the family. Our approach to the use of the NBO is therefore based on the recognition of the baby's individuality and on his or her capacity for connectedness and also on the transforming effects of the infant on the caregiver. As Daniel Stern points out, the baby offers a unique "port of entry" in terms of intervention to affect change in the relationship between mother and baby. The baby therefore plays an active role in the NBO session. The infant can therefore be seen as the catalyst by providing a powerful motive for positive change in the parents and it is through the infant that we hope to motivate and support parents in their efforts to respond to their infants.

The NBO in practice - evidence

The NBO is being used increasingly by nurses, doctors, psychologists, social workers, physical and occupational therapists, home visitors, and other early intervention professionals in their clinical practice. Although the NBO is still in its infancy as an intervention approach, a number of studies have examined its effectiveness as a form of support.

One study compared the effects of two models of early intervention (EI) home visit service delivery - an NBO-based intervention and usual care - on parents' perceived quality of EI service delivery (McManus and Nugent, 2012). Families of newborns referred to EI were randomly assigned to a neurobehavioral intervention or usual care group and followed until the infant was 12 weeks corrected gestational age. The intervention group received a weekly NBO intervention home visit. The usual care group received standard weekly home visits. Mothers completed the Home Visiting Index (HVI) measuring the quality of EI service delivery. Mixed linear regression was used to examine group differences in quality scores. The intervention group reported higher quality of care related to facilitating optimal parent-infant social interaction (mean difference = 2.17, 95% CI: 0.41, 3.92). These data show that the NBO model of service delivery can be successfully integrated into EI programming and appears to be associated with higher parent-reported perceived quality.

In a qualitative study of first-time mothers and their full-term babies, Sanders and Buckner (2006) showed that using the NBO enabled mothers to recognize, understand, and respond to the behavioral cues of their infants. Moreover, nurses who participated in this study overwhelmingly identified a need among their patient populations for interventions that enhance engagement and help mothers learn about their infants. Participating nurses unanimously believed the NBO would be effective in promoting the development of the parent–infant bond. There were few barriers identified by participants or the investigator. Because some of the nurses in this study thought that their current patient load might prohibit their routine use of the NBO, they suggested that it may be more cost- and time-efficient to have one or more nurses specializing in patient education and newborn assessment conduct NBO sessions with all families or those identified as high risk. Sanders and Buckner conclude that there is a great need among mothers for measures that increase their understanding of their infants and that the NBO could be an effective intervention in

enhancing engagement, encouraging maternal role transition, and promoting attachment and bonding.

The effects of the NBO when used by home visitors have also been examined in a study conducted in Japan. Kashiwabara (2012) demonstrated that the NBO was effective in promoting positive mother–child and father–child mutual interaction. Results show that as a result of their participation in the NBO, mothers understood their infants' capabilities and communication cues very well. Most of them also stated that they also developed a better understanding of how to respond to their infants' behaviors and reactions, and how to calm them when they cry. Because mothers in Japan return to their parents' house for the first month after delivery, it is often difficult for fathers to participate in child-care during this period. This home-visiting NBO intervention was especially successful in engaging Japanese fathers. All of the fathers in the study stated that they learned a lot about their infants' capabilities through the NBO. They also maintained that they understand a lot about their baby's communication cues, about how to respond to their behaviors and reactions, as well as how to interact with their infants.

In a study of first-time mothers and their full-term infants (n=106), the NBO, conducted in hospital and home settings during the postnatal period, was associated with a decrease in postpartum depressive symptomatology (Nugent et al. 2006). These results suggest that the NBO can have a transforming effect on the mother by influencing the quality of her interactions with her infant, enhancing her sense of competence and thereby preventing the likelihood of serious postpartum depression.

Research also shows that Early Intervention service providers who integrate an NBO-based neurobehavioural intervention report more favourable perceptions of their confidence in treating high-risk families than their counterparts delivering usual care (McManus and Nugent, 2011). While these results suggest promise for improving EI service delivery for families of high-risk infants – a vulnerable population – the authors suggest that future research should replicate these results with a larger, more diverse sample where the service providers are randomised to the intervention or control groups.

In sum, these studies provide evidence to show that the NBO is associated with enhanced mother-infant engagement in first time mothers, reduction of postpartum depressive symptomatology, parent's positive perceptions of their interactions with their high-risk infants in Early Intervention settings, increased levels of father involvement and higher perceived confidence among service providers in working with low- and high-risk newborns and their families (Kashiwabara, 2012; McManus & Nugent, 2011, 2012; Nugent, Blanchard, & Stewart, 2007; Nugent et al. 2006; Sanders & Buckner, 2006).

Conclusion

This chapter began with the António Lobo Antunes's moving description of the life-affirming response of the doctor to the newborn baby in war-torn Angola. The doctor's epiphany echoes two key principles which guide our approach to our early intervention work with families: namely that understanding and appreciating the new baby as a unique individual can provide a powerful motive for positive change in parents and caregivers and, secondly, that the newborn period provides clinicians with a unique opportunity to promote

positive parent-infant interaction and prevent misattunements in the emerging parent-infant relationship.

The goal of the NBO, therefore, is to place the baby at the centre of our work with families at this particularly sensitive time in the infant's adaptation and development. By sensitizing parents to their baby's capacities and communication cues, the NBO makes it possible for the infant to reveal him- or herself as an individual and thus provide a powerful motive for positive change in the parents. From this perspective, the baby "stands for the renewal of the self; his birth can be experienced as a psychological rebirth for his parents" as Selma Fraiberg points out (Fraiberg, 1980, p. 54). As the great Irish writer George Bernard Shaw put it, "Life is a flame that is always burning itself out, but it catches fire again every time a child is born".

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