

# BRAZELTON NEONATAL BEHAVIORAL ASSESSMENT SCALE

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## BRAZELTON NEONATAL BEHAVIORAL ASSESSMENT SCALE

**Primary Disciplinary Field(s):** Neonatology, Developmental Psychology, Pediatric Medicine, Child Assessment

### 1. Core Definition and Purpose

The **Brazelton Neonatal Behavioral Assessment Scale (NBAS)** is a highly respected and internationally utilized clinical research tool designed to evaluate the neurological and behavioral capabilities of newborn infants. Developed by pediatrician **T. Berry Brazelton** and his colleagues in the 1970s, the NBAS moves beyond simple neurological reflex testing, aiming instead to capture the newborn's unique behavioral style, organizational capacities, and responsiveness to environmental stimuli. Unlike standard Apgar scoring, which focuses on immediate physical vitality, the NBAS is typically administered to full-term, healthy infants between three days and four weeks of age, providing a detailed portrait of the infant's competency and individuality.

The fundamental purpose of the NBAS is not merely diagnostic but interactive and educational. It serves as a comprehensive evaluation of the infant's ability to organize its responses to stress, manage its state of arousal (from deep sleep to crying), and interact socially. By assessing 28 behavioral items and 20 reflex items, the scale provides a holistic understanding of the infant's temperament and its capacity for self-regulation. This focus on the infant's strengths and adaptive behaviors marks a paradigm shift from viewing the neonate as a passive entity to recognizing them as an active, competent participant in the parent-infant relationship.

Clinically, the NBAS is employed to identify newborns who may be at risk for developmental issues, but it is perhaps most valuable as an intervention tool. When administered in the presence of the parents, the assessment process itself becomes a crucial teaching moment, often referred to as a "micro-intervention." The administrator systematically demonstrates the infant's unique capacities--such as its ability to track a human face, quiet itself, or respond to parental voice--thereby enhancing parental confidence and fostering early bonding and sensitive caregiving. This emphasis on parental education distinguishes the NBAS from purely objective measurement scales.

### 2. Historical Origin and Development

The development of the NBAS was spearheaded by **Dr. T. Berry Brazelton**, a prominent American pediatrician and professor emeritus at Harvard Medical School. Prior to the 1970s, many infant assessments focused primarily on deficits and rudimentary neurological status, often underestimating the complex behavioral repertoire of the newborn. Brazelton sought to develop an instrument that could accurately reflect the subtle, often transient, behavioral differences that

characterize neonatal behavior and predict future developmental trajectories.

Brazelton's work was deeply rooted in the premise that newborns are highly sophisticated social organisms capable of communicating their needs and preferences from the moment of birth. His initial research sought to document these innate capabilities systematically. The scale was formally introduced in 1973, marking a significant milestone in developmental psychology and neonatology. It integrated existing knowledge about infant reflexes with novel observations concerning social interaction, state control, and motor organization, creating an integrated view of infant behavior.

Since its inception, the NBAS has undergone several minor revisions and adaptations to ensure its clinical relevance and cross-cultural applicability. Its enduring impact stems from its ability to operationalize the complexity of infant behavior for both researchers and practitioners. The scale provided the empirical evidence needed to shift popular and professional perception of the neonate, establishing that even the youngest infants possess inherent competencies necessary for establishing early human relationships and adapting to their postnatal environment.

### 3. Methodology and Administration

The administration of the Brazelton Neonatal Behavioral Assessment Scale is a highly standardized procedure requiring specific training and sensitivity from the examiner. The assessment typically takes 20 to 30 minutes, although the actual duration is heavily dependent on the infant's state regulation. The goal is to observe the infant across all possible states of arousal, ranging from deep sleep (State 1) to crying (State 6).

The examination is designed to test the infant's behavioral limits by gradually introducing specific stimuli and observing the infant's attempts to cope and respond. The administrator carefully manipulates the infant's state, moving them from sleep states to alert states, and back again, noting the effort and skill involved in these transitions. For example, the examiner will attempt to startle the infant and then observe how quickly and effectively the infant can consolidate its state, often through self-soothing behaviors like bringing the hand to the mouth or utilizing external soothing techniques provided by the examiner.

Crucially, the NBAS scoring is not based on a single, static measure, but rather on the infant's best performance across several trials. The environment must be calm and quiet, and the infant must be alert and receptive for the social-interactive items. Because the infant's physiological and behavioral state is constantly changing, the examiner's role is dynamic, requiring careful observation of subtle shifts in breathing, skin color, muscle tone, and activity level, all of which influence the validity of the behavioral responses recorded.

## 4. Assessment Domains: Behavioral Organization

The NBAS includes 28 behavioral items, which are organized into four major clusters that assess the infant's overall organizational competence. These behavioral items are typically rated on a 9-point scale, reflecting the range of behaviors from low performance (1) to optimal performance (9).

**State Organization:** This domain evaluates the infant's ability to control and maintain specific states of consciousness. It includes items such as the duration of alert states, the ease of being consoled when crying, and the ability to maintain a quiet, alert state. A high score indicates a well-organized infant who can easily transition between sleep and wakefulness and effectively self-soothe or respond to external soothing efforts.

**Social-Interactive Cluster:** This cluster assesses the infant's responsiveness to social stimuli, highlighting their innate communicative skills. Key items include the infant's ability to turn toward and follow a human voice, the quality of their alertness when engaging with the examiner's face and voice (**Orientation to Face and Voice**), and the degree of their "cuddliness" or response to being held. These measures are pivotal for understanding the infant's capacity to initiate and sustain early parent-child interactions.

**Motor Organization:** This cluster assesses the quality and control of the infant's motor activity. It includes observations of general muscle tone, the control of movement, and the presence of activity level fluctuations. Items like the quality of alertness and defensive movements are crucial, indicating how well the infant can modulate their motor responses in the context of external stimulation.

**Autonomic Stability:** This critical domain measures the infant's physiological ability to cope with stress and stimulation without becoming disorganized. It assesses signs of stress (or "autonomic lability") such as tremors, startles, skin color changes, and respiratory irregularities. An infant exhibiting strong autonomic stability can handle the demands of the examination and the external environment without excessive physiological distress.

## 5. Assessment Domains: Neurological and Reflexive Responses

In addition to the 28 behavioral items, the NBAS incorporates 20 items focused on neurological integrity and traditional neonatal reflexes. These reflexive items are usually rated on a 4-point scale (ranging from 0 to 3), focusing more on the presence, symmetry, and robustness of the physical response rather than the quality of behavioral organization.

The reflexive items cover standard neonatal reflexes necessary for survival and motor development, providing essential insight into the integrity of the central nervous system. These include fundamental assessments such as the **Moro Reflex** (startle), the **Rooting Reflex** (turning the head when the cheek is stroked), the **Sucking Reflex**, and the **Grasp Reflex** (hand-mouth coordination). The quality of these reflexes, their symmetry across both sides of the body, and their

persistence or disappearance at the appropriate developmental stage are closely scrutinized.

Furthermore, assessments of passive and active tone are included within the neurological section. Passive tone evaluation involves assessing the resistance of the limbs to passive manipulation, such as straight leg raising or scarf sign, providing data on muscle tension and resting posture. Active tone involves observing the infant's spontaneous motor activity and defensive reactions. While the behavioral items highlight competence, the reflexive items function primarily as a standard neurological screening to identify potential underlying organic deficits.

## 6. Scoring, Interpretation, and Clinical Applications

Scoring the NBAS results in a profile rather than a single numerical score, reflecting Brazelton's emphasis on individual patterns of competence and vulnerability. The 28 behavioral items are rated on a 9-point scale where a score of 5 represents the average expected behavior, and scores of 7, 8, or 9 represent optimal performance, indicating the infant's capacity to utilize specific skills effectively. Reflexive items are rated based on their strength and completeness.

Interpretation involves analyzing the patterns across the four main behavioral clusters. A challenging assessment might reveal a pattern where the infant struggles with **Autonomic Stability** (e.g., frequent tremors and color changes) but demonstrates strong **Social-Interactive** skills (excellent orientation to voice and face). This profile suggests a physiologically fragile infant who is highly motivated for social engagement, allowing clinicians and parents to tailor interventions that protect the infant's autonomic system while maximizing their social strengths.

The primary clinical application is the use of the NBAS as an intervention tool, particularly for high-risk populations, such as premature infants, infants exposed to substances *in utero*, or infants with prenatal complications. The assessment helps clinicians document deficits, track recovery, and educate parents on their specific child's unique needs and communication cues. By identifying subtle cues--like the infant looking away when overstimulated--parents learn to modulate their own interactions to match the infant's optimal level of arousal, thus strengthening the early parent-infant attachment and promoting optimal developmental outcomes.

## 7. Significance and Theoretical Impact

The introduction of the NBAS fundamentally transformed the field of infant development research and clinical neonatology. Its most significant theoretical contribution was its powerful refutation of the historical view of the newborn as a largely unfeeling, unorganized being driven solely by basic reflexes. Brazelton demonstrated empirically that infants are highly communicative, differentiated, and socially motivated organisms equipped with powerful innate tools for survival and bonding.

The scale's emphasis on competence and organizational capacity provided researchers with a

nuanced tool for studying the early effects of various prenatal and postnatal factors, including nutrition, maternal stress, environmental toxins, and birth complications. It became an essential instrument in cross-cultural studies, revealing both universal and culturally specific differences in neonatal behavior and parenting practices. The NBAS helped establish the framework for understanding the infant's contribution to the reciprocal nature of the parent-child relationship, defining development as an interactive process from the earliest days of life.

Furthermore, the NBAS heavily influenced subsequent infant assessment tools, promoting the trend toward ecological and interactive assessments that prioritize observation of the infant in the context of their environment, rather than standardized laboratory conditions. Its legacy is found in the widespread adoption of relationship-centered care models in pediatric settings globally, underscoring the importance of early behavioral observation for long-term health and psychological well-being.

## 8. Criticisms and Limitations

Despite its profound influence, the NBAS is subject to several methodological and practical criticisms. One of the primary limitations is its reliance on the subjective judgment of the examiner. The scale demands extensive training and continuous practice to achieve acceptable levels of inter-rater reliability, particularly for the subtle behavioral items. Since the scoring is based on the infant's "best performance," the examiner's skill in eliciting and interpreting these peak behaviors is critical, making the results difficult to replicate across different administrators.

Another major criticism concerns the inherent variability of neonatal behavior. An infant's state--whether they are hungry, sleepy, or irritable--can dramatically influence their performance on any given day. While the protocol attempts to account for state changes, the transient nature of these behaviors means that a single administration may not accurately reflect the infant's underlying capabilities. This variability often limits the NBAS's predictive validity concerning later cognitive outcomes, though it remains a strong predictor of current neurological status and organizational style.

Practically, the NBAS is time-consuming compared to rapid screening tools. The required 20-30 minutes of focused administration and scoring makes it impractical for routine use in high-volume clinical settings. Consequently, its primary utility often remains concentrated in specialized research contexts or intensive clinical programs focused on parent education and early intervention, rather than broad public health screening.

## 9. Further Reading

[Brazelton Neonatal Behavioral Assessment Scale - Wikipedia](#)

[The Neonatal Behavioral Assessment Scale \(NBAS\) - Brazelton Institute](#)

The Brazelton Neonatal Behavioral Assessment Scale: Evaluation of its use and utility - ScienceDirect

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