THE PRIMITIVE AND POSTURAL REFLEXES AS DEFINED BY HEMISPHERES

There is a recognised typical pattern of emergence and inhibition of the reflexes. However, from my own clinical practice, it appears evident that the reflexes can persist into later ages and into adulthood, even amongst well-functioning children and adults.

Data on the prevalence of the reflexes beyond their expected date of inhibition is not available yet. Amongst the population of children who seek help from Hemispheres, we are gathering a growing body of evidence to support the presence of specific reflexes that correlate with a defined set of symptoms, thus indicating a possible predictive nature to the impact these reflexes have on skill development and behaviours. Equally we are finding that specific diagnostic groups display definite reflex profiles. However, these groupings need to be further researched, explored and ratified to show true credibility as a diagnostic or predictive measure.

At present, Hemispheres views the reflexes as being grouped in terms of their functional, emotional, physical, neurological and behavioural effects/components. Equally, they can be thus grouped as levels for intervention during treatment. These groupings are effective, therefore, in both assessment and treatment and can help to define and clarify a practitioner's clinical reasoning and intervention when working with a child.

The reflexes listed below are not the only reflexes within a child' system, but they do represent a clear and defined cohort of reflexes that show a profile of neurological development/immaturity. A good place to start.

The following descriptions define each reflex group and briefly explain the impact they can wield on the reflex chain as a whole:

The Grasping Reflexes

This group is comprised of the Palmar, Plantar, Babinski, Sucking and Rooting Reflexes. These reflexes are all expected to be active at birth. They work together to assist the baby to settle and facilitate early arousal of the cortex. Initially they link together and then separate the Babkin Response (hands, mouth and feet connectivity). The baby develops feelings of security, thereby settling the Moro Reflex, whilst gaining adequate comfort and nutrition from the parent through the establishment of feeding routines.

The first section of the Hemispheres Neurological Assessment assesses the presence of each of these reflexes and observes the interplay between them. Experience has shown that involuntary activity in any of these reflexes can disrupt the emergence and integration of later reflexes. This can negatively influence the functional skills which are associated with reflexes higher up the reflex chain.

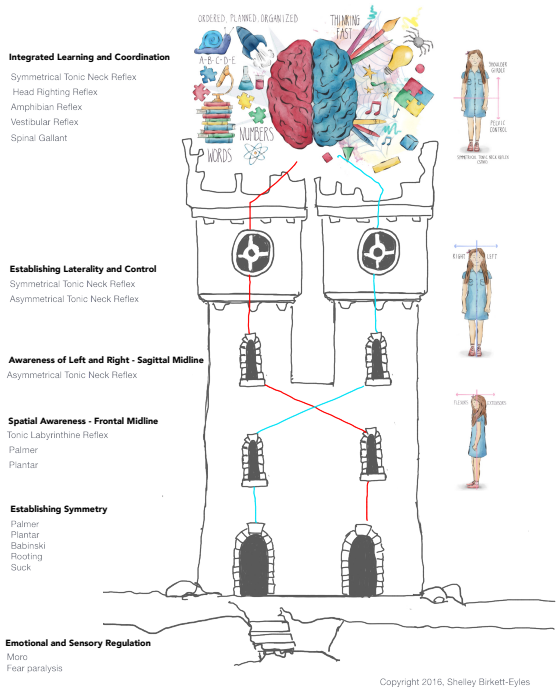


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Figure 3: Hemispheres Tower of Neurological Development

The Emotional Based Reflexes

This group is comprised of the Fear Paralysis Response and the Moro or Startle Reflex. These reflexes are significant in establishing the child's ability to interpret sensory information from their own body and the environment around them. This facilitates feelings of security, attachment and emotional expression. These reflexes are VERY SENSITIVE. They have the potential to upset the whole chain of reflexes and need to be treated with respect, sensitivity and consideration. It is for this reason that these reflexes are assessed at the end of the Hemispheres Neurological Assessment (HNA). This ensures as much early compliance from the child as possible.

Integrating Reflexes

This group is comprised of the Tonic Labyrinthine Reflex (TLR), Asymmetrical Tonic Neck Reflex (ATNR) and the Symmetrical Tonic Neck Reflex (STNR). The interactions of these three reflexes are key in establishing sensory awareness of the Sagittal (left and right), Transverse (top and bottom) and Frontal (front to back) midlines of the body. They thereby facilitate the child's developmental of movement against gravity. Being able to isolate and control the body in each and between all three of these midlines is essential for accurate motor planning, sensory awareness of the body's position and efficient proprioceptive and vestibular functioning for balance, climbing and interacting with objects. This set of reflexes is paramount in establishing connectivity within the brain itself, and between the brain and the body for learning and whole-body coordination respectively.

Facilitating Reflex

There is a clear pattern of interaction between the reflexes which have proximity within the reflex chain. However, the Spinal Gallant Reflex is one which not only facilitates the integration of the reflexes but is also active and present during the actual birthing process. This reflex, therefore, crosses many boundaries and is important for the settling of the grasping reflexes.

Lifelong Reflexes

This group is comprised of the Head Righting, Amphibian and the Vestibular Reflexes. These reflexes are stimulated through the movement of the child in the early stages of sensory and motor development. They therefore facilitate the inhibition of the other reflexes, especially the integrating reflexes on their journey of establishing appropriate and efficient control of the body against gravity. These reflexes remain for life. Hence, the aim of any intervention is not to inhibit these reflexes, but to establish efficient automatic control for balance and other equilibrium reactions. Another lifelong reflex is the Moro, which when matured acts to support our fight and flight responses.

THE PATTERN OF REFLEX DEVELOPMENT

To understand the role of the reflexes in development it is important to appreciate the smaller detail. Each reflex follows a journey of its own, but this does not occur in isolation from the other reflexes and combined with them, the whole process creates a chain of reflex responses.

When the chain of reflexes successfully waxes and wanes then the child's development follows a similar journey to a line of dominoes: the first one is pushed, falls and knocks into the next and so on until the whole chain has collapsed.

The neurological chain of reflexes is embedded in typical child development. The medical professions have applied this sequence of emergence and inhibition in the examination of neurological maturity in children. The reflex profile of a child is, therefore, a reliable predictor of the emergence of motor milestones (Capute et al, 1982). Equally, it is a predictor of neurological abnormality (Zafeiriou et al, 1995, Zafeiriou, 2004) and of those children at high risk of neurodevelopmental delay (Forslund, Bjerre, 1983, Capute 1986).

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The reflex chain has a recognisable sequence in which the reflexes emerge and inhibit. The Figure 5 illustrates the pattern of reflex emergence and inhibition, and the colour coding depicts reflex groups defined by Hemispheres.

The reflexes, similar to the dominoes, are designed to emerge and unfold sequentially, run for a period of time and then begin to integrate. Many of these reflexes will run in parallel with others and will demonstrate a degree of interplay in their shared role in developing voluntary movements. The development of learnt voluntary movements allows the brain and the body to work together and to serve a common purpose. So how does a small child evolve from the involuntary control level to that of voluntary control?

The reflexes follow the typical pattern of a bell curve illustrated in Figure 4. The emergence of a reflex is a strengthening process, where over a given period of time the movement pattern grows in its force and control. It then reaches a peak in its strength and is practised until the movement begins to reach some level of voluntary control. This then triggers the inhibiting pattern, allowing the involuntary movements to begin to reduce in strength. At this stage, maturation is occurring and the cortex or higher neurological centres are overriding and dominating.

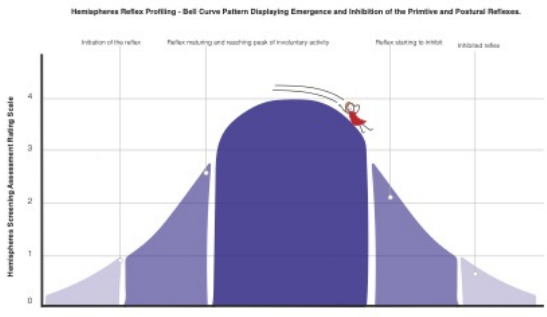


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Figure 4: Hemispheres Bell Curve Profile of Each Reflex

What happens if a reflex does not fully emerge?

We know that reflexes can re-emerge in a neurological system where damage or disease is occurring. This evidence would suggest that these involuntary reflexes do not fully inhibit, therefore, but suppress their responses, lying dormant within the system, ready to re-emerge if their protective qualities are required or the higher centres lose their dominant overriding control.

Reflexes which do not fully emerge are generally weak in their responses. As a result, neurological, physical, functional, emotional and sensory problems can occur. This is because other reflexes in the chain are hampered in their emergence and development and the child fails to practise fully the desired commensurate involuntary movements. The severity and specific properties of the problems will depend on the position of the reflex(es) in the chain, the impact on the child's functioning and the presence of any congenital or physical deformity.

Assertions made by Hemispheres

Hemispheres, assert the following when interpreting a reflex profile:

- Disruption to earlier emerging reflexes impacts on the child's ability to interact with their environment and will hamper the development of later reflexes.
- The greater the involvement of the early primitive reflexes (grasping) the higher the level of dysfunction seen.
- The greater the involvement of the emotional reflexes (FPM and Moro) the more difficult it is for the child to interact purposefully within their environment.
- Earlier reflexes impact on the emergence and strength of later reflexes
- Emerging and practising the movements and skills associated with the reflex results in functional, emotional and behavioural changes.
- All children need to pass through this sequential, pre-programmed reflex chain to ensure efficient linking and integration of the neurological structures.
- Certain reflexes work together to produce

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specific maturation of certain levels of the neurological system and its corresponding functions.

- Emerging but retained reflexes will result in a partial development of associated skills but will result in a delay in subsequent reflex function.

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