Environmental enrichment for promoting development

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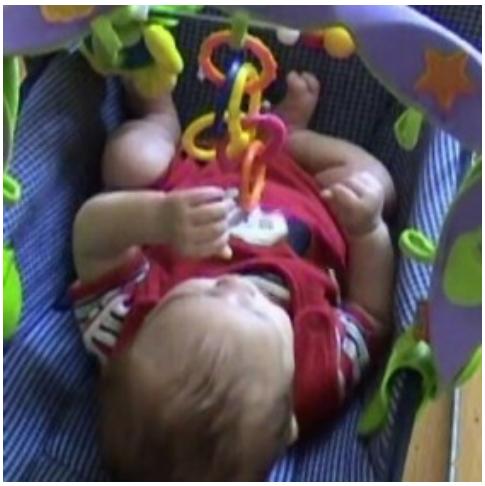
Environmental enrichment (EE) is broadly defined as an environment that that enhances and promotes social and perceptual motor-experience and learning.

Enriched physical environments provide many opportunities for the infants to engage in self-initiated perceptual-motor activities that are adapted to their abilities and allow them to succeed.

Enriched physical environments

A play-gym with carefully positioned toys within easy reach.



Prone with chest on low step to encourage child to play in prone

Sitting with a raised surface on either side to support sitting balance and allow reaching for toys.

Provide interesting events to watch

Infants learn a lot from watching how people, animals and things move and behave in the environment

- People move about, stop, turn around, sit down, sing, talk to each other.
- Objects that are moving tend to keep moving unless they are stopped by a barrier.
- Balls bounce when dropped, but a cushion does not.

Enriched social environment and interactions

Daily routines provide many opportunities for social engagement - bathing, feeding time, changing a nappy, putting into car seat, family mealtimes.

- Social games filled with anticipation, mirroring and mimicking, excitement, time to respond.
- Enriched social engagement provides infants with choices, time to respond, initiate an interaction, follow instructions.
- Use on nonverbal communication and hand gestures - again with time for infant to respond.
- Lots of proto-conversations with infant and play partner taking turns, using language as well as infant babbling and other interesting sounds.
- Social partner use of positive actions when infant succeeds - hooray! with raised arms, clapping, well done!.

Enriched environments in animal studies

EE has been proven to enhance neuroplasticity and promote memory and motor function in animal studies but the effect in humans is less well understood.

In animal studies, an EE is defined as one that facilitates enhanced cognitive, motor and sensory stimulation. (Nithianantharajah 2007)

EE in animal studies provide housing conditions that typically include high levels of complexity and variability with arrangement of toys, platforms and tunnels being changed every few days to promote motor learning and memory.

Animals are not forced to perform activities; rather their engagement with the environment is active and playful.

The motor opportunities afforded by EE are a critical success factor.

EE studies include both animal initiated activity as well as specific training schedules.

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Nithianantharajah J, Hannan AJ. Enriched environments, experience-dependent plasticity and disorders of the nervous system. Nat Rev Neurosci. 2006;7(9):697–709pmid:16924259

Environmental enrichment for infants

No single agreed definition of environmental enrichment (EE) for human infants exists. (Morgan 2015)

Morgan et al (2015) have proposed proposed an operational definition of infant EE, consistent with the animal literature. "Infant EEs are interventions that aim to enrich at least 1 of the motor, cognitive, sensory, or social aspects of the infant’s environment for the purposes of promoting learning."

In addition, based on animal definitions, EE requires active exploration of complex and variable environments.

Examples of EE include interventions aiming to enhance parent-infant interaction, educate parents about assisting their child’s skill development, provide opportunities for active motor learning (self-generated motor activity) by adapting the physical and play environment, or provide comprehensive programs aimed at enrichment across a number of domains. (Morgan 2015)

Environmental Enrichment in the GAME Approach

"Parents were encouraged and assisted to set up motor enriched play environments to promote child self-generated movements, exploration and task success."

"This included instruction in careful toy selection "matched" to the desired motor task, plus physical set up of areas for practicing and repeating activities related to the identified goal areas, weightbearing, and reaching and grasping tasks. Conventional baby equipment (e.g. highchairs, toys) already purchased by the family was used wherever possible."

"The whole environment for motor learning was taken into account and therefore intervention also included: (a) evidence-based early learning stimulation and role modelling to enhance cognitive and language development (e.g. reading books to children, limiting passive television watching); (b) optimising sleep hygiene, for example assisting with implementing sleep routines; and (c) feeding interventions (e.g. anti-reflux medications) to ensure adequate caloric nutrition and pain-free backdrops for learning."

"The importance of variable daily experiences for infants was deliberately addressed and support given when parents articulated difficulty leaving the house. Siblings and extended family members were also actively encouraged to take part in the HP and therapy sessions to promote: family knowledge; family acceptance; family wellbeing; repetition of learning opportunities; and provide a natural source of varied social interaction for the infant." Extracted from Morgan 2015

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