

Overview of the theories of child development

Nathaniel Yomogida, SPT

Chloë Kerstein, SPT

Table of contents

1 Overview	1
2 Neuromaturational Theory	1
3 Cognitive Theory	2
4 Behavioral Theory	2
5 Dynamic Systems Theory	3
6 Neuronal Group Selection Theory	3
7 Developmental Direction	3

1 Overview

Here are historical and current theories of child development. Dynamic systems theory is common in pediatric physical therapy. Neuronal group selection theory is the most common in physical therapy in general. It should be noted that none of these theories are correct.

2 Neuromaturational Theory

- Development follows a set, invariant sequence¹.
- Development is tightly tied to central nervous system development¹.
- Motor development is cephalocaudal and proximal to distal¹.
- Recent modifications acknowledge variations in the sequence and input from all systems¹.

McGraw & Gesell were the main proponents of the original theory, which consisted of a step type sequence of development and intervention, Not totally linear, but more or less linear

There is a Newer version of theory; can you adapt /change pattern CNS maturation drives development Normal sequence / hierarchy of skill development Classic developmental scales based on this work Importance of developmental reflexes and stepwise sequence of development in intervention

Gessell She says: As you start to master one skill, and u introduce the other skill, u may see a regression is previous skill or new skill wont look perfect Development happens in a proximal to distal sequence, motor skills develop gross to fine Development is dynamic and characterized by alternating advancement and regression Crawling: initial symmetrical arm pattern, then alternates UE Regression to earlier patterns as more mature version occurs

3 Cognitive Theory

- Thinking develops in stages of increasing complexity.
- Children organize mental schemes through the use of mental operations².

Piaget: cognitive development theory - 4 stages of cognitive development (inc complexity) - Sensorimotor stage (0-2 years): reflex activity leads to purposeful mvmt - Pre operational stage (2-7) : unidimensional awareness of environment - Concrete operational stage (7-11) less egocentric, solve concrete probs - Formal operational stage (11+): solve abstract probs, deductive reasoning - Child's active involvement in environment (not just neuromaturation) critical to infant development - Scaffolding: parents/therapists provide environmental challenge that encourages a child to perform higher level skill - Some EC programs based on this - Montessori: uses cognitive and developmental theories - Child given freedom to interact and engage in environment and self select activities from specialized materials - Reggio emilia: investigatory and exploratory environment helps with problem solving skills

4 Behavioral Theory

- Main proponent: Pavlov
- Stimulus/response approach
- Modify behavior thru manipulating stimuli
- Modifying parameters such as intensity/freq/etc
 - ABA- application of behavioral theory
 - Get a reward for a desired action
- Assumes most behaviors are learned responses
- Positive and negative reinforcements

5 Dynamic Systems Theory

- Commonly used theory in pediatric PT
- Main proponents: Shumway-Cooke, Thelen, Herriza, Woolacott
- Emphasis on process rather than product
- Results of many intrinsic and extrinsic factors, cooperation of systems
- Development is nonlinear
- Mvmt occurs based on child's internal factors/ motivators, external environmental and motor task to be completed
- How u do it more important than outcomes
- process > product

6 Neuronal Group Selection Theory

- CNS influence on development
- Brain organized into population of cells (units) containing individually variable networks (neuronal groups)
- structure / function of these groups influenced by evolution, environment, behavior
- Like DST, development is non linear BUT GENETICS is as important as experience to shape development
- Interplay between neuroanatomy and experience form maps that connect neuronal groups

Dynamic systems = most common in PT

7 Developmental Direction

- Reflexive to cortical: we start off w reflexive mvmts and we generally are able to override as we age
 - Prox to distal
 - Extensor control to flexor control
 - Generalized to localized (gross motor to fine)
 - Medial to lateral
 - Open to closed chain (mobility to stability)
 - Asymmetric to symmetric development (super important in children, if u see asymmetrical things happening, it should be a yellow flag!!)
1. Effgen SK, Fiss AL, eds. *Meeting the Physical Therapy Needs of Children*. 3rd ed. F.A. Davis Company; 2021.
 2. Effgen SK, ed. *Meeting the Physical Therapy Needs of Children*. 2nd ed. F.A. Davis Co; 2013.