

Blueprint Idea (contd.)

- Blueprint implies that a particular characteristic is coded in the genes
- As we have seen, though, genes only code for proteins and it is a long and very tortuous road to the development of behavior
- The blueprint idea is discussed by D. Lehrman



Innate - the Semantic Confusion (Lehrman)

- Semantic confusion, or what does “innate” mean?
 - In biology, it means developmental fixity & that environmental factors play no role
 - and to a geneticist innate only refers to a distribution of a trait based on its distribution in the parental population; nothing is implied about the development of the trait
 - In psychology, this idea is expressed in the context of learned/unlearned and is usually based on finding the behavior at birth. If the behavior/capacity/skill exists at birth then it is assumed to be genetic because environment did not have time to shape the behavior



But Is Birth a Critical Point in Development?

- No!
- Birth is an arbitrary point in development when major changes that have consequences for development occur
 - The fetus which lives in an aquatic, dark, & audibly different environment moves into one where he/she needs to breathe and is exposed to light, altered sounds, smells, etc.



Innate – the Conceptual Confusion (Lehrman)

- Conceptual confusion, or what theoretical approach is correct? This is a level-of-analysis problem
 - Do you study the functional (i.e., evolutionary) value of a behavior?
 - If you do then you only ask about the function of the behavior once it is mature and, thus, you miss how it developed
 - Or do you study the development of the behavior and how development contributes to the ultimate functionality of a given skill?
 - If you do then you must adopt a **causal ontogenetic approach** which asks about antecedent factors, even non-obvious ones, that contribute to the development of a behavior (e.g., Bobwhite and Mallard chicks' approach to the maternal call depends on their own and siblings' pre-hatching vocalizations and post-hatching tactile experience)

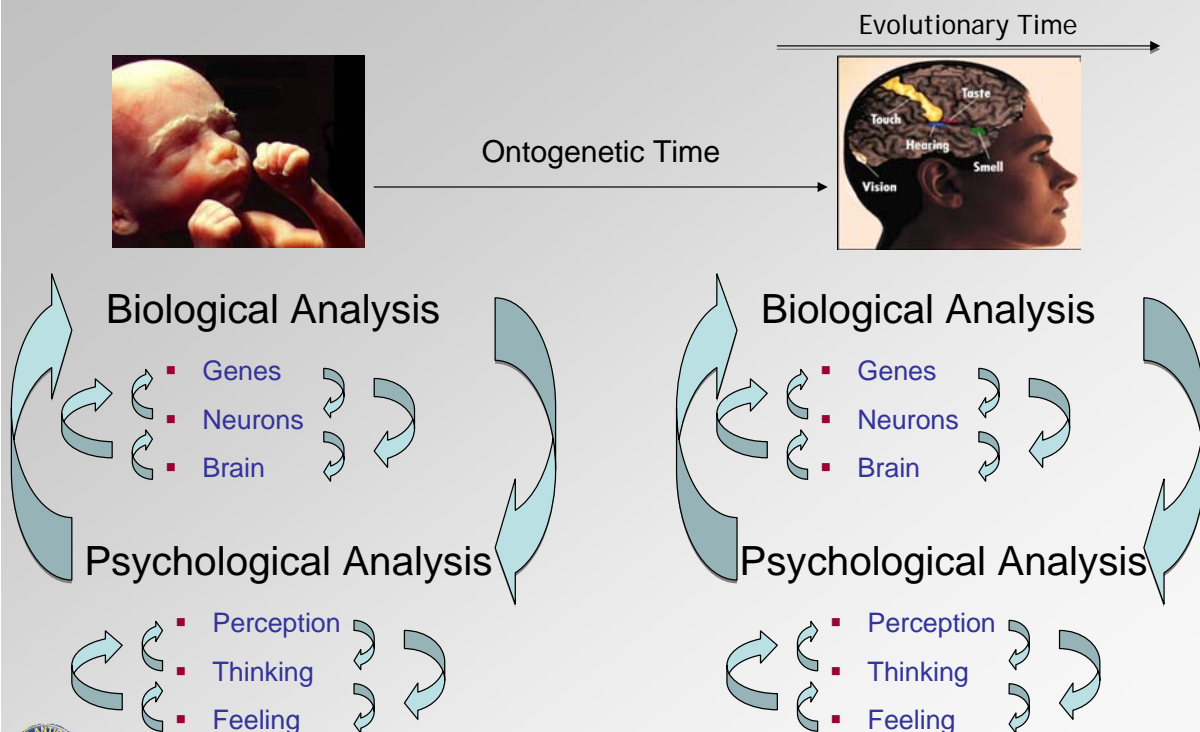


Studying Behavioral Development

- Definition of Behavior
 - Activity of whole organism at all levels of organization (genetic, neural, organismic)
- Thus, study of behavior involves whole organism
 - This means structure-function relationships
 - Analysis must involve both biology & psychology and depends on the question being asked
- Studying infancy means studying behavioral change/transformation
 - Pet peeve of mine: studies at a single age only tell a partial developmental story
- Application of the Developmental Systems approach assumes that development is not simple & that one should not resort to reductionistic thinking!



Levels of Analysis in Ontogeny & Phylogeny



Interdisciplinary Approach

- Study of development must be interdisciplinary
- But there is a danger: translation of concepts from one level of analysis or context to another often leads to change in the original meaning of a concept
 - E.g., - the original meaning of “imprinting” was: an attachment that was formed during a *critical period* and was *irreversible*
 - Incorrect on both counts
 - This concept was applied to explanations of human attachment (e.g., Bowlby) but is inappropriate because neither criterion of original definition applies in the human case & attachment in humans is due to many other complex factors unlike those in the duckling



Principles of Development

- Development depends on an open system where irreversible changes occur
 - due to interaction of various levels of system
- Developing systems are active and thus:
 - seek input (e.g., a reaching, walking baby has new experiences which result in re-organization)
 - transform their environment based on input (e.g., a reach changes the external world of objects by removing one object from view)
- Interactions among systems and components are reciprocal but only partially coupled
 - an individual is only partially constrained by the family system & vice-versa
- Growth and increase in complexity



Principles of Development

- Drive to reach coherence/stability
 - Result is distinct stages where things are organized differently
- Each stage is an ontogenetic adaptation to current conditions (R. Oppenheim)
 - Metamorphic animals (amphibious and terrestrial forms of the same animal differ radically)
 - Human infants have reflexes that disappear and are not preparations for adult-like abilities (e.g., sucking vs. feeding)
- There is no drive to reach a mature state; development emerges from earlier conditions
 - Thus, comparisons of children with adults may be inappropriate (again - Oppenheim's concept of ontogenetic adaptations)
- Points of coherence lead to instability & re-organization
 - At some point, the current adaptation is no longer sufficient (e.g., sucking does not allow baby to eat solid food; looking alone is not sufficient to explore objects and, thus, reaching emerges, ...)
- Increased complexity of behavioral functions but loss of flexibility (canalization)
 - Loss of phoneme discrimination ability in infants
- Development produces emergent/unpredictable properties

