Lecture 1: Prenatal Development

I. Introduction
   a. Ideas about development
      i. Background
         1. In the 1800-1900s children work 12 hours per day
         2. They are also present in taverns w/adults
         3. There are very few child labor laws
         4. No separation of grades or levels in schools
      ii. Beginnings of the notion of Development
         1. Concerns arise about work conditions e.g. how they are affecting children’s health and corrupting their morals
         2. Research and theory begin
            a. Charles Darwin—‘Origins’ focuses on evolution and development, also produced one of the first baby biographies
         3. Stage theories emerge (Jean Piaget)
            a. Children must not be viewed as little adults
   iii. Developmental Psychology—study of change in behavior over time
      1. Behavior includes perception, language, and reasoning
      2. Over time means as people get older; sometimes just a few months, sometimes many years
   b. Measuring Change
      i. Cross sectional studies: different groups of people studied at different ages
      ii. Longitudinal studies: one group is studied at different age periods
   iii. Advantages of each research design
      1. Cross sectional: good description of age differences in a short period of time
         a. Ex. Change in language between ages 4 & 6?
            Measure vocab in age groups of children 4, 5, and 6
      2. Longitudinal: addresses question of whether on ability leads to another

II. Genetic Influences
   a. Genes
      i. Located on chromosomes
      ii. Genes produce proteins needed for:
         1. Cell formation
         2. Enzymes that regulate cell function
   b. Genes and Environment
      i. Genes turn on at different points in development
      ii. Environment can turn on genes or even alter genetic programs
   c. Genetic lottery
      i. Conception
c. Control hears ‘pa’
   d. Turn on ‘pa’ once habituation occurs change experimental group to ‘ba’
   e. Babies can discriminate between ‘pa’ and ‘ba’

   Number Concepts—violation of expectation
   i. Infants will stare longer at a violation of expectation
   ii. Objects placed on stage→screen comes up→second object placed behind screen→hand leaves empty

Possible
- screen drops 2 objects

Impossible
- screen drops 1 object

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Lecture 3: Cognitive Development

I. Piaget’s stage theory
   a. Jean Piaget
      i. Observes children and asks “how does logical thinking develop?”
      ii. In response develops four stages
         1. Sensorimotor—gains knowledge through senses/movement
         2. Preoperational—intuitive reasoning
         3. Concrete operational—logical w/straightforward objects
         4. Formal operational—higher reasoning
   b. Sensorimotor stage
      i. Characterized by a lack of object permanency—object continue to exist when they are no longer visible
      ii. Piaget tested object permanence in infants by attracting an infant to a toy covering it up and then asking where the object went
         1. Method= Manual
   c. Preoperational stage
      i. Characterized by egocentrism—the inability to take a perspective that differs from your own
      ii. Methods of testing:
         1. Observation: Hide-n-go seek game
            a. Children will hide behind a coat rack because they can’t see the seeker they think the seeker can’t see them
         2. Tests: Conservation task
Intelligence tests do not measure intelligence in the same way that thermometers measure temperature.

Basically, intelligence testing is not as simple as it seems and what it can tell you about a person is not necessarily directly correlated to intelligence.

- The most widely used intelligence tests of the day are the Stanford-Binet and the WAIS (Weschler Adult Intelligence Scale).

Consequence of Intelligence (aka what intelligence tests can predict)

- Intelligence test scores are highly correlated with just about every outcome (grades, jobs, money, health, longevity) that human beings care about.
- Intelligence tests are among the best predictors of how well employees will perform in their jobs.
- Intelligence test scores also predict people’s performance on basic cognitive tasks.
- Intelligence tests are the best predictors of the number of years of education an individual will receive.
- Intelligence test scores also are good predictors of a person’s political and religious attitudes.

- Intelligence: One ability or Many?
  - Factor analysis—a statistical technique that explains a large number of correlations in terms of a small number of underlying factors.
  - Spearman
    - Factor theory of intelligence—every task requires a combination of a general ability (g) and skills that are specific to the task.
  - Thurstone
    - No such thing as g, instead there are a few stable and independent mental abilities such as perceptual ability, verbal ability, and numerical ability which he called primary mental abilities.
      - These abilities were neither general nor specific.

- Confirmatory factor analysis
  - Spearman and Thurstone had both been right.
  - Scores on different mental ability tests are best described by a three-level hierarchy.
  - General factor (Spearman’s g) at the top, specific factors (Spearman’s s) at the bottom, and group factors (Thurstone’s primary mental abilities) in the middle.

- Middle-Level Abilities
  - The Data-based Approach
  - John Carroll and his analysis of intelligence test scores.
    - Eight independent middle-level abilities
    - Memory and learning, visual perception, auditory perception, retrieval ability, cognitive speediness,