The Adaptive Value of Cognitive Immaturity

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Aspects of children’s *immature* functioning are adaptive in their own right, providing infants and children with immediate benefits.
The adaptive value of cognitive immaturity

- Prolonged growth maintains flexibility and plasticity of the brain and behavior
- Recovery of function from early deprivation

- Reduce stimulation to afford learning
  - Limited sensory functioning reduces sensory input or experience and serves to decrease competition between developing senses.
  - Immature sensory systems are not handicaps that must be overcome, but are adaptive and necessary for proper sensory development and sensory learning.
In fact, *early learning* can interfere with later learning.
Discrimination learning-set performance for monkeys as a function of the age at which testing was begun (from Harlow)
“There is a tendency to think of learning or training as intrinsically good and necessarily valuable to the organism. It is entirely possible, however, that training can be either helpful or harmful, depending upon the nature of the training and the organism’s stage of development.”

Harry Harlow
“Educational” DVDs/videos for infants

- **Lapware**: computer programs designed for infants and toddlers, as young as 6-months old, to be played while sitting in mom or dad’s lap

- **ToddleToons** allows babies and toddlers to build language skills and to learn concepts such as cause and effect, big and little, up and down, happy and sad, colors and shapes, body parts, and more.”
Does Viewing Baby DVDs Enhance Cognitive Development?

- Toddlers who watch baby DVDs show no greater understanding of words than toddlers who never view them (DeLoache et al., 2010; Richert et al., 2010; Robb, Richert, & Wartella, 2009).

- 12- and 15-month olds failed to learn a problem-solving strategy from watching *Baby Wordsworth* videos, although 18- and 24-month-olds did (Robb & Richert 2009).

- For 8 to 16-month olds, every hour of baby DVD/video watching corresponded to about 6 to 8 fewer words in their receptive vocabularies (Zimmerman, Christakis, & Meltzoff, 2007).

- Background TV can adversely affect infant and young children’s behavior (Schmidt et al., 2008).

- Television and other forms of infant-directed videos clearly attract and hold infants’ attention, but it is not until 18 months of age that the content of the video, rather than the physical stimulus qualities of the display, will hold a child’s attention (Courage & Setliff, 2010).
Implications for Preschool Education: Direct-Instructional vs. Developmentally Appropriate Programs

- **Direct-Instructional Programs**
  Formal instruction in reading, arithmetic, etc., similar to that provided to schoolage children

- **Developmentally Appropriate Programs**
  Geared to young children’s “natural” propensities for discovery learning through play
• Immediate Effects on Academic Measures: **Mixed**

• Long-term (1 year or more) Effects on Academic Measures:

  **Developmentally Appropriate > Direct-Instructional Programs**

  (Burts et al., 1993; Marcon, 1999; Walsh et al., 2006)
Effects on Motivation & Psychosocial Factors
Developmentally Appropriate > Direct-Instructional Programs

• Children attending Developmentally Appropriate Programs display:
  – Less stress
  – Like school better
  – More creative
  – Less text anxiety
  – Greater pride in accomplishment
  – Higher expectations of academic success
  – Greater peer-acceptance component of self-competence
  – Greater perception of self-competence

• (Burts et al., 1990, 1993; Hirsh-Pasek et al., 1990; Jambunathan, 2012; Jambunatha et al., 1999; Schweinhart & Weikert, 1988; Sipek et al., 1995, 1998; Walsh et al., 2006)
The adaptive value of thinking you’re better than you are.

Metacognition: the knowledge people have about the workings of their own minds – their mental strong and weak points, the skills they possess – as well as their ability to evaluate and monitor their own behavior.
Benefits of overestimating one’s abilities

- Increases sense of self-efficacy and mastery (Bandura)
- Task persistence
- Faster improvements on some cognitive tasks
One last comment on plasticity

• Although children’s brains and cognitions remain plastic/pliable, once cognitive competencies have been established, they tend to remain stable, unless environments change.

• Working memory, executive function, vocabulary, all increase with age, but differences between the highest and lowest performing students tend to remain constant, or even increase, with age (Matthews effect)

• Importance of establishing intellectual competence early in life, and thus the importance of quality preschool education, especially for children from high-risk environments.
Nature wants children to be children before they are men. If we deliberately depart from this order, we shall get premature fruits which are neither ripe nor well flavored and which soon decay. We shall have youthful sages and grown up children. Childhood has ways of seeing, thinking, and feeling, peculiar to itself; nothing can be more foolish than to substitute our ways for them.

• Jean Jacques Rousseau
Thank You!