

# PSY 254

## Precept 3 - Motor

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He/him/his



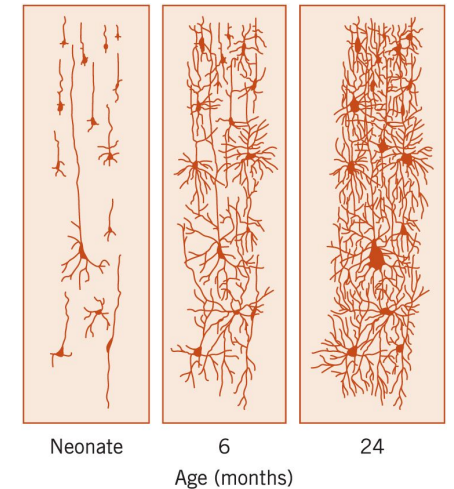
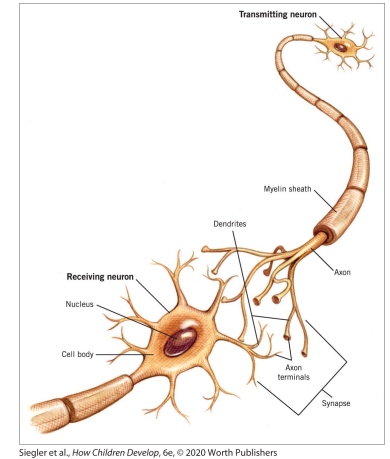
# Today's agenda

- Discuss some key concepts
- Smith et. al. (2011) Discussion
- App/toy/book assignment review

# Key Concepts

## Tuesday's lecture: Brain and body development

- Experience-expectant and experience-dependent plasticity
- Neurogenesis
- Synaptogenesis and synaptic pruning
- Myelination
- Infant nutrition/feeding
- Obesity



Siegler et al., *How Children Develop*, 6e, © 2020 Worth Publishers



# Key Concepts

## Coming up: Motor development

- Reflexes
- Affordances
- Reaching
- Self-locomotion
- Scale errors
- Dynamic systems theories





How we move is  
based on  
context...and  
our own  
curiosity!

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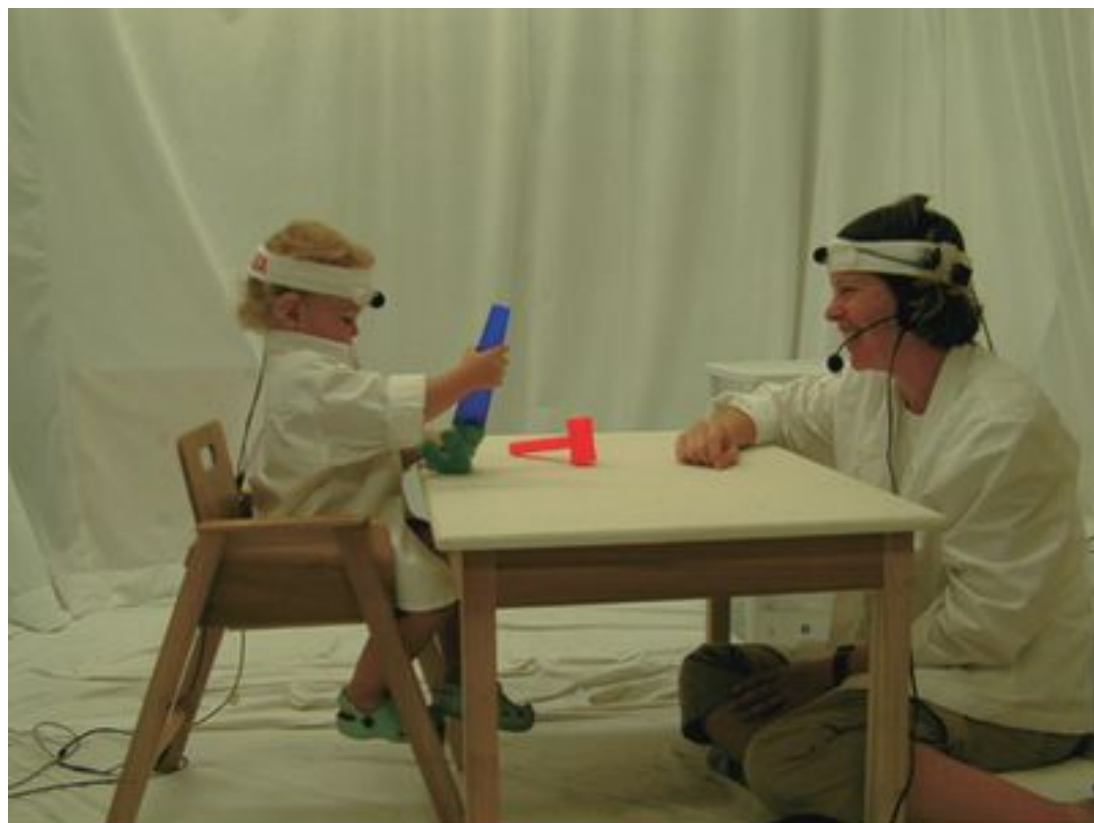
# Video of Karen Adolph gap study



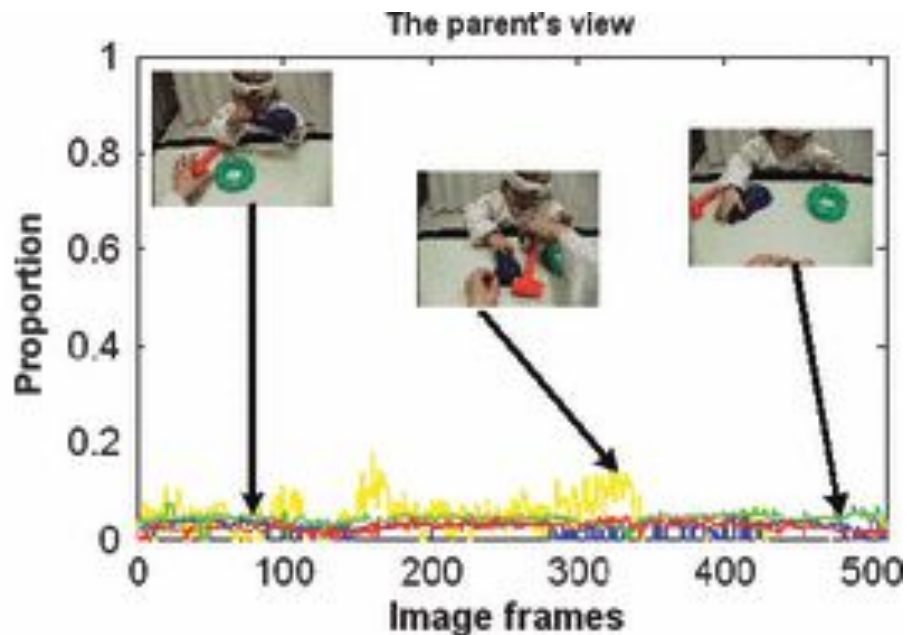
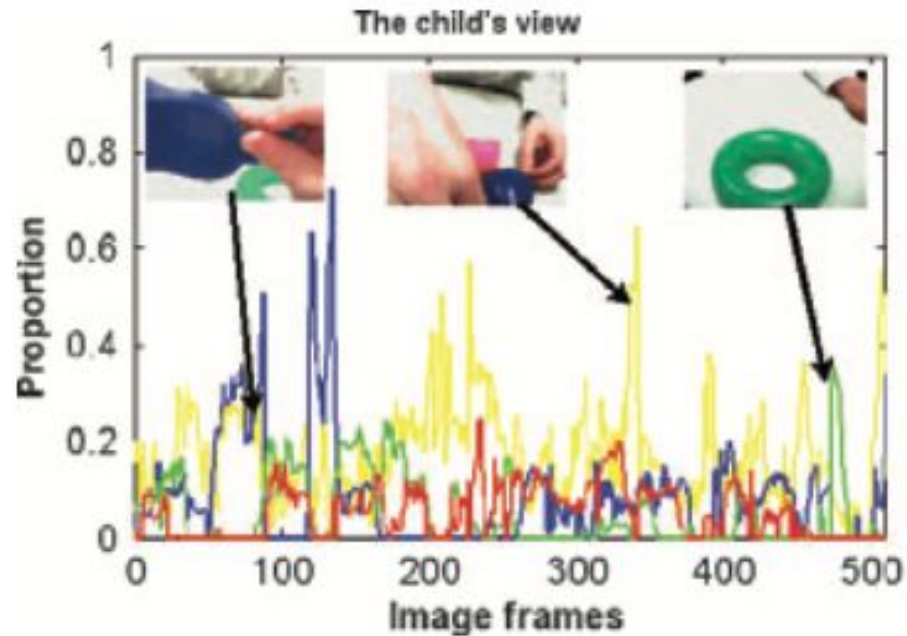
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# Smith et al. (2011): Methods







“The toddler view is one in which, at any one moment, **one toy is much larger than the other toys in the image** and the largest object in the image **changes often**. In contrast, the parent view is **broad, stably containing all three objects**, with each taking up a fairly constant and small portion of the head camera field.”

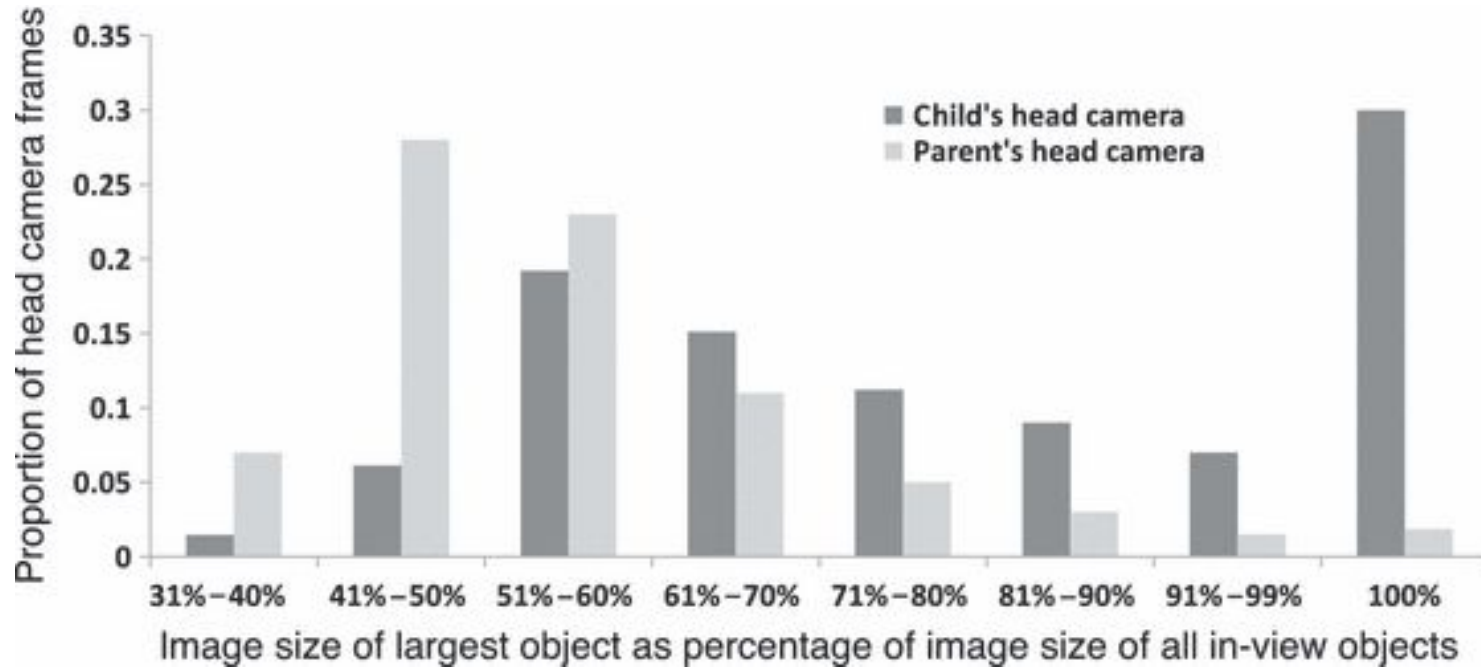


Image size of largest object as % of all image



37%



23%



14%

“The adult view includes and is equal distance from all of the objects on the table top; but in marked contrast, the child’s view often contains one dominating object that is closer to the head and eye and thus often blocks the view of the other objects.”

In a play context, a toddler's perspective is highly selective and often centered on one object at a time.

Short arms naturally lead to a constrained visuo-motor space near to the body.

This constrained space may create a learning advantage as manual engagement naturally leads to one object dominating the view.

This may facilitate processes of object segregation, integration of multiple object views, and stabilization of attention.



# Smith et al. (2011) Discussion

1. Questions?
2. What did you like/dislike?
3. What are the implications from this study?
4. What follow-up studies would you carry out?
5. Is the study set-up a good approximation of children's home environments? Why would it matter?



# Optional: Child development and AI

**Science**


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HOME > SCIENCE > VOL. 383, NO. 6682 > GROUNDED LANGUAGE ACQUISITION THROUGH THE EYES AND EARS OF A SINGLE CHILD

RESEARCH ARTICLE | MACHINE LEARNING


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## Grounded language acquisition through the eyes and ears of a single child

WAI KEEN VONG , WENTAO WANG , A. EMIN ORHAN, AND BRENDEN M. LAKE  [Authors Info & Affiliations](#)

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18,759  1



### Editor's summary

How do young children learn to associate new words with specific objects or visually represented concepts? This hotly debated question in early language acquisition has been traditionally examined in laboratories, limiting generalizability to real-world settings. Vong *et al.* investigated the question in an unprecedented, longitudinal manner using head-mounted video recordings from a single child's first-person experiences in naturalistic settings. By applying machine learning, they introduced the Child's View for Contrastive Learning (CVCL) model, pairing video frames that co-occurred with uttered words, and embedded the images and words in shared representational spaces. CVCL represents sets of visually similar things from one concept (e.g., puzzles) through distinct subclusters (animal versus alphabet puzzles). It combines associative and representation learning that fills gaps in language acquisition research and theories. —Ekeoma Uzogara



[Vong, Wang, Orhan, and Lake, *Science* (2024)]

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# App/Toy/Book Evaluation Assignment

- Guidelines available on Canvas; due **November 13<sup>th</sup> at 5pm**
- You can work individually or in a group of 2-3 people from this precept
- Evaluate one or two features of the product based on one of:
  - Perceptual/motor development
  - Cognitive development (which dimensions)
  - Language acquisition
  - Social-emotional development
  - Moral development
  - Identity development
- What would a child learn (or not learn) by engaging with this product?
- Would you recommend the toy and why? Future directions?

# For next class:

- Do the readings (2) – Pascalis (2002) and Vogel (2012)
  - Come to class with questions/comments about this paper
- Submit a multiple-choice mock exam question on Canvas + indicate correct answer
- Office Hours; Thurs 2-3pm (PSH 321)





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