Background

- The discrimination and identification of elements within the environment are important visual tasks for humans (Geisler, 2008, Schmidt et al., 2017).
- Categorization ability already starts within the first year of life (Madole & Oakes, 1998; Pauen, 2002), when visual abilities are still developing (Siu & Murphy, 2018).
- Categories and their visual properties with significance for humans may play a particular role during categorization development (Pauen & Hoehl, 2015; Wertz, 2019).

Current Project (Fig. 1)

- 2 Studies addressing aspects of visual categorization:
  - scene segmentation, similarity judgments, classification in infants, preschoolers, and adults.
  - (Schlegelmilch & Wertz, 2020, under review)

Study 1: Card-sorting Tasks
76 preschoolers (age: 4-5 years), 72 adults
1. Sorting 30 images into groups according to visual similarity.
2. Classification: Vegetation, natural elements, artifacts.

Study 2: Eye-tracking Search Task
39 infants (age: 8 month)
261 Search stimuli variants:
- Target image patch on background image, 10 possible locations, saliency controlled.
- Congruent or incongruent in category membership.

General Results

Fig 2. Visual properties predicted task performance

Study 1

A Similarity judgments
Area
Depth
Predicted means (GLM)

B Classification
Depth
Category classified by age group

Study 2

C Scene segmentation
Intensity
Area
Depth
Target detection success

Fig 3. Category impact modulated by task and age group.

A Similarity judgment

B Classification

C Scene segmentation

Conclusion

- Age-dependent impact of ecologically significant characteristics on young children’s performance (i.e., depth cues, naturally occurring low-level complexity, category impact).
- Visual abilities affect categorization: Attention to properties is modulated by task and age.
- This highlights the importance of further developmental research on visual categorization with naturalistic, structure-like stimuli.