

ERC Synergy Grant project **SHAPE: The system of shape representations in cognition, development and across languages**

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Shape is a prominent feature of the visual world and determines how we perceive and store information about objects, how we interact with them and what uses they can be put to. It is also richly encoded in the languages of the world by organizing object labels in terms of their shape (tall elongated objects, slim objects, round oval objects), as well as actions involving manipulating those objects which are encoded in verbs. For instance, in Japanese, there is no word for zipping clothes, unlike English, but there are specific verbs for putting on clothes depending on their shape (e.g., pants). Sign languages are a salient example of how shape organizes the lexicon and grammar of language, with the hands representing visuo-geometric properties of real-world referents. Importantly, around the second year of life, young children start attending to shape as a vital cue for acquiring the label of objects, a phenomenon known as “the shape bias”. The shape bias develops at the intersection between spatial ability skills and language, especially vocabulary size. The dynamics of this relationship is largely understudied. In addition, children on atypical developmental trajectories tend to have problems in using the shape bias in word learning. Exactly what is causing these problems has not been identified. The main goals of SHAPE are to map out the relationship between the visual perception of shape and its encoding across languages in the world and to identify the factors which constrain the observed cross-linguistic variation. We are interested in the two-way relationship between spatial cognition and language across speakers in different cultures, across development and the factors which conspire to produce difficulties in this domain in children on atypical developmental paths.

SHAPE combines the expertise and builds on the synergy of researchers in vision research, child development, language and cognition, sign language and neuro-diverse populations (autism and developmental language disorder) in 5 countries in Europe and the USA: Mila Vulchanova (NTNU, Norway), Linda Smith (Indiana University, USA), Pamela Perniss (Köln University, Germany), Frank Seifart (CNRS, France), Larissa Samuelson (UEA, UK) and Caroline Larson (University of Missouri, USA).

The talk will present the research underpinnings of the project and discuss specific phenomena and findings serving as its background.