Categorization behavior is a hallmark of cognition, and color is paradigmatic, used to study the biological and cultural forces that transform sensory data into behaviorally relevant representations. Languages vary widely in their number of color terms, leaving open the possibility that language itself plays a role in determining how colors are categorized. Here we determine how colors are categorized when language is not a factor by examining color behavior in macaque monkeys, a species that is equipped with a trichromatic retina like humans yet obviously lacks language. Macaque monkeys can be trained to bin colors into pre-defined color categories, but it is unknown whether monkeys spontaneously categorize colors and if so, how. Behavioral evidence is inconclusive. For example, monkeys appear to lack a category boundary between blue and green, but such a boundary may not be determinative of color categorization behavior—indeed, many languages group blue and green together into a single “grue” concept. One puzzle has been to design an experimental paradigm that can recover color categories without requiring a verbal readout or without pre-defining the categories. We tackle this puzzle with a four-alternative forced choice task, in which on each trial the animal is presented with a cue color and is rewarded for matching it to one of four targets on a subsequent frame, one of which is always correct and the three others are foils. Error

There are both similarities and differences in how different languages categorize colors.

Here we deploy a data-driven approach to recover the color categories in macaque monkeys, a trichromatic primate that has the

Color categorization has been examined previously in macaque monkeys, but with conflicting conclusions.

determine color categories has been an .

-where do categories come from reflecting the neural processes that compute behavioral relevance from sensory data

. Prior work on preferential looking in human infants has provided one approach to this question. Our approach is complementary,