

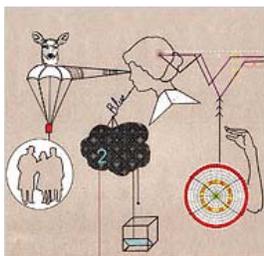


When Language Can Hold the Answer

By CHRISTINE KENNEALLY
Published: April 22, 2008

Faced with pictures of odd clay creatures sporting prominent heads and pointy limbs, students at Carnegie Mellon were asked to identify which "aliens" were friendly and which were not.

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Alyson Fox

The students were not told that the aliens fell naturally into two groups, although the differences were subtle and not easy to describe.

Some had somewhat lumpy, misshapen heads. Others had smoother domes. After students assigned each alien to a category, they were told whether they had guessed right or wrong, learning as they went that smooth heads were friendly and lumpy heads were not.

The experimenter, Dr. Gary Lupyan, who is now doing postdoctoral research at [Cornell](#), added a little item of information to one test group. He told the group that previous subjects had found it helpful to label the aliens, calling the friendly ones "leebish" and the unfriendly ones "grecious," or vice versa.

When the participants found out whether their choice was right or wrong, they were also shown the appropriate label. All the participants eventually learned the difference

between the aliens, but the group using labels learned much faster. Naming, Dr. Lupyan concluded, helps to create mental categories.

The finding may not seem surprising, but it is fodder for one side in a traditional debate about language and perception, including the thinking that creates and names groups.

In stark form, the debate was: Does language shape what we perceive, a position associated with the late Benjamin Lee Whorf, or are our perceptions pure sensory impressions, immune to the arbitrary ways that language carves up the world?

The latest research changes the framework, perhaps the language of the debate, suggesting that language clearly affects some thinking as a special device added to an ancient mental skill set. Just as adding features to a cellphone or camera can backfire, language is not always helpful. For the most part, it enhances thinking. But it can trip us up, too.

The traditional subject of the tug of war over language and perception is color. Because languages divide the spectrum differently, researchers have asked whether language

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affected how people see color. English, for example, distinguishes blue from green. Most other languages do not make that distinction. Is it possible that only English speakers really see those colors as different?

Past investigations have had mixed results. Some experiments suggested that color terms influenced people in the moment of perception. Others suggested that the language effect kicked in only after some basic perception occurred.

The consensus was that different ways to label color probably did not affect the perception of color in any systematic way.

Last year, Lera Boroditsky and colleagues published a study in The [Proceedings of the National Academy of Sciences](#) showing that language could significantly affect how quickly perceptions of color are categorized. Russian and English speakers were asked look at three blocks of color and say which two were the same.

Russian speakers must distinguish between lighter blues, or goluboy, and darker blues, siniy, while English speakers do not have to, using only "blue" for any shade. If the Russians were shown three blue squares with two goluboy and one siniy, or the other way around, they picked the two matching colors faster than if all three squares were shades from one blue group. English makes no fundamental distinction between shades of blue, and English speakers fared the same no matter the mix of shades.

In two different tests, subjects were asked to perform a nonverbal task at the same time as the color-matching task. When the Russians simultaneously carried out a nonverbal task, they kept their color-matching advantage. But when they had to perform a verbal task at the same time as color-matching, their advantage began to disappear. The slowdown suggested that the speed of their reactions did not result just from a learned difference but that language was actively involved in identifying colors as the test was happening. Two other recent studies also demonstrated an effect of language on color perception and provided a clue as to why previous experimental results have been inconclusive. In The Proceedings of the National Academy of Sciences, Dr. Paul Kay of the International Computer Science Institute at Berkeley and colleagues hypothesized that if language is dominant on the left side of the brain, it should affect color perception in the right visual field. (The right visual field is connected to the left side of the brain, and vice versa.)

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