Conceptual Salience in Naming and Describing

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Keywords: iconicity, conceptual salience, verbal description, sign languages, silent gesture

1 Background

Research on sign languages has shown an unexpectedly high degree of similarity between the forms of lexical items: even unrelated sign languages with no areal contact and used in different cultures can share up to 20% of their basic lexicons (McKee & Kennedy 2000, Guerra Currie et al. 2002). A common explanation for this is that iconicity is responsible: although not all meanings are easily represented iconically in sign languages, many are, and those meanings show up with similar forms across languages. However, this is not a complete explanation. Since multiple distinct forms can iconically represent an idea equally well, iconicity on its own does not explain why the same forms (i.e., the same iconic representations) show up across unrelated languages. Why, therefore, do the signs have the particular similarities that they have?

Silent gesture studies suggest that the similarities between sign forms might reflect something about the categories labelled by the signs. In these studies, hearing non-signers are asked to convey a meaning manually (i.e., with their hands but no vocalizations). Sometimes participants are explicitly trying to communicate with someone else in these studies, but not always. And yet, here as well, the forms of the gestures are often remarkably similar across participants (Merola, 2007; van Nispen, van de Sandt-Koenderman, & Krahmer, 2017; Tkachman & Hudson Kam, 2016; Ortega & Ozyurek, 2020). That is, even in non-signers, and regardless of whether the task is communicative, the same regularities in forms are seen.

For example, in a previous study, when we asked sign-naïve people to create signs for a set of nominal meanings (e.g. cat, tree), we found that they converged on a limited set of features/ideas that served as a basis for their signs, e,g. whiskers were commonly used in the invented signs for 'cat'. In a follow-up analysis we compared the signs our participants created for animal terms with real signs from actual sign languages to see if the ideas, or *conceptual bases*, encoded in the created signs were the same as those encoded in real signs, and we found that the conceptual bases used in the created signs overlap to a large extent with the conceptual bases motivating real signs. This suggests that the choice of conceptual base is not entirely arbitrary.

In this study we ask if the conceptual base most frequently encoded in real and created iconic signs are the features of the concepts that are most salient to people, where by salient we mean simply properties of a category that come to mind most readily

when thinking about the category, something that we term conceptual saliency. A conceptually salient property therefore is one people strongly associate with the category, i.e., the most prototypical features of the prototypical category member.

2 Methods

54 sign-naïve native English speakers (ages 18-48, 12 men) participated. They were given 20 names of animals for which we had elicited novel signs in our previous research (bat, bear, bee, cat, caterpillar, dinosaur, dog, goldfish, frog, gorilla, horse, kangaroo, lion, ostrich, mouse, robin, giraffe, alligator, snake, whale), and asked to write all of the attributes (features) they could think of that were "common to and characteristic of that animal". Each animal name appeared in print at the top of a sheet of paper. They had 90 seconds per animal and could write as many attributes as they wanted.

3 Results

Altogether, there were 10,519 responses, belonging to 2,360 unique underlying features, with an average of 118.1 features per referent (range 73-155) and 4.45 tokens per feature (range 1-57). By 'underlying feature' we mean a unique idea, regardless of the particular lexical instantiation of that idea: e.g., the responses 'big' and 'large' are treated as belonging to the same underlying feature.

We begin by analyzing participants' first responses, as these very clearly are the things that came to mind most readily. We then compare the three most common underlying features in the first responses to the conceptual bases of signs for those same animal names in actual sign languages.

There were 1,124 total first responses. These collapsed into 312 distinct underlying features, with a mean number of underlying features per animal of 15.6 (range 6-25). For the comparison between first responses and signs, we looked at the three most commonly reported underlying features per referent. The three most common underlying features accounted for 59.5% of all first responses, suggesting that people indeed converge on very few ideas when they are thinking about these animals; salient features are broadly shared between individuals. Moreover, these three underlying features accounted for 21% of all responses (not just first responses). In 10 of the 20 referents, the most frequent underlying feature overall was also the most frequent feature in the first responses. In an additional 5 referents (25%), the most frequent underlying feature overall was the 2nd or 3rd most frequent in the first responses.

The particular properties represented in the first responses varied, however, the three most frequent underlying features in the first responses per animal belonged to only 10 types: 16 refer to some physical feature of the animal (e.g., "whiskers" for *cat*); 10 to color, 9 to size, 7 to lifestyle (e.g., "nocturnal" for *bat*), 5 to the animal's vocalizations, 5 to human ideas about the animal (e.g., "friendly" for *dog*); 3 to the animal's actions, 2 to the animal's shape, 2 identified some type of general knowledge about the animal (e.g., "echolocation" for *bat*), and 1 to taxonomy (e.g., "mammal").

Interestingly, when we compared these frequent features to the underlying features used in corresponding signs of 33 natural sign languages of the deaf (data from spreadthesign.org), the most frequent underlying feature in our dataset was also the most frequent one in signs for 8 out of 20 animals. In 6 more animals, one of the 3 most frequent features is used in at least one sign language. So, while there was variety in the kinds of attributes that our participants listed first for the animals, at the level of individual animals, there was also a high degree of match between the listed attributes and the conceptual bases of iconic signs for those same animals.

4 Discussion

Even though sign creation and writing a list of features are very different methods, there is remarkable overlap in the ideas people list and those that they use in iconic sign formation, suggesting, to us at least, that sign creation is tapping into conceptual structure. This has implications for discussions about iconicity in language, specifically, it supports the idea that iconic representations are constrained and bounded, not arbitrary choices among possibilities, as some researchers have previously suggested. It also suggests that small set of attributes are 'prototypically prototypical'. Though the particular task limits which underlying ideas are chosen (e.g., there were no colors in signs or silent gestures), conceptual salience does play a role.

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