

Body Parts and Early-Learned Verbs

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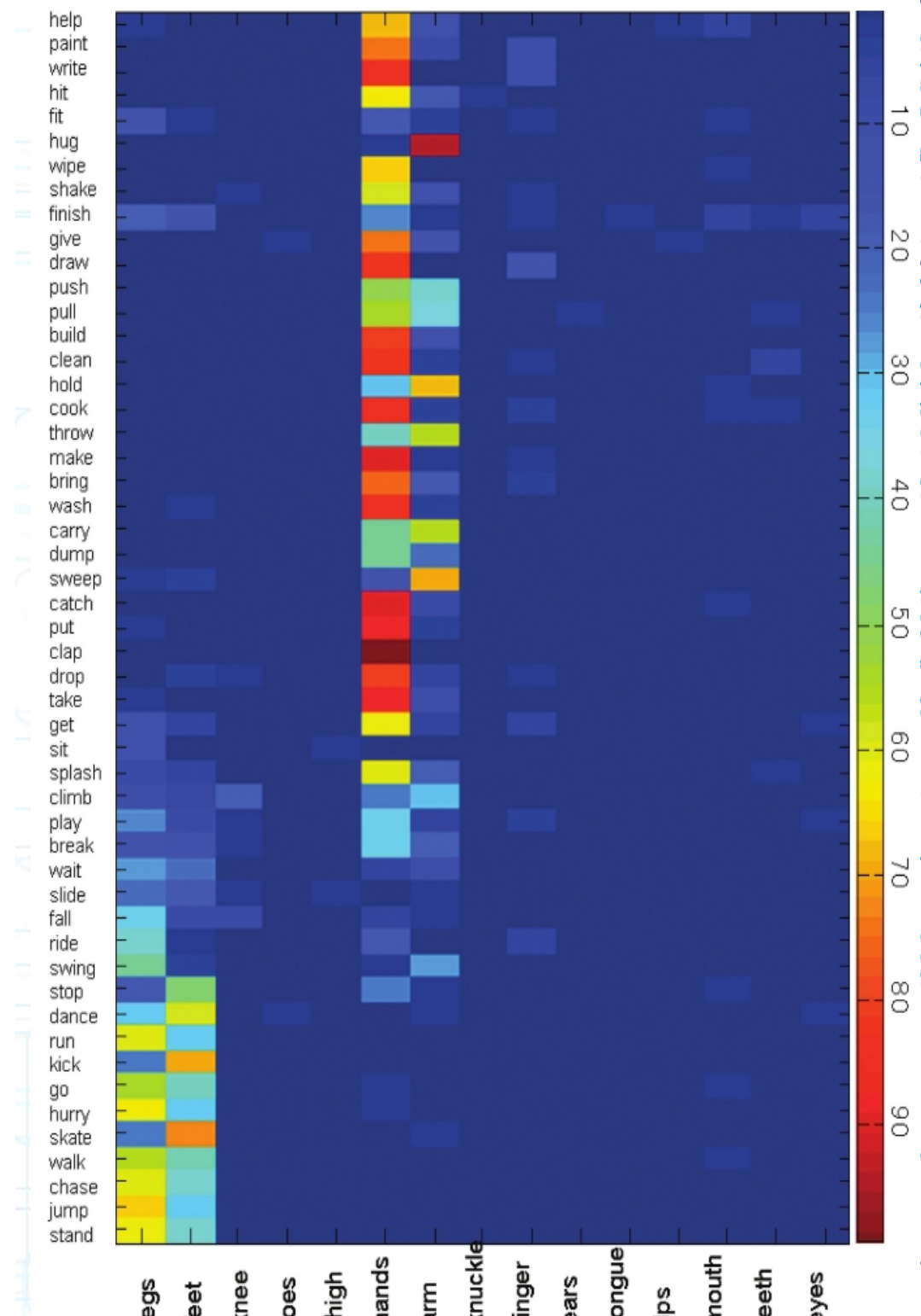
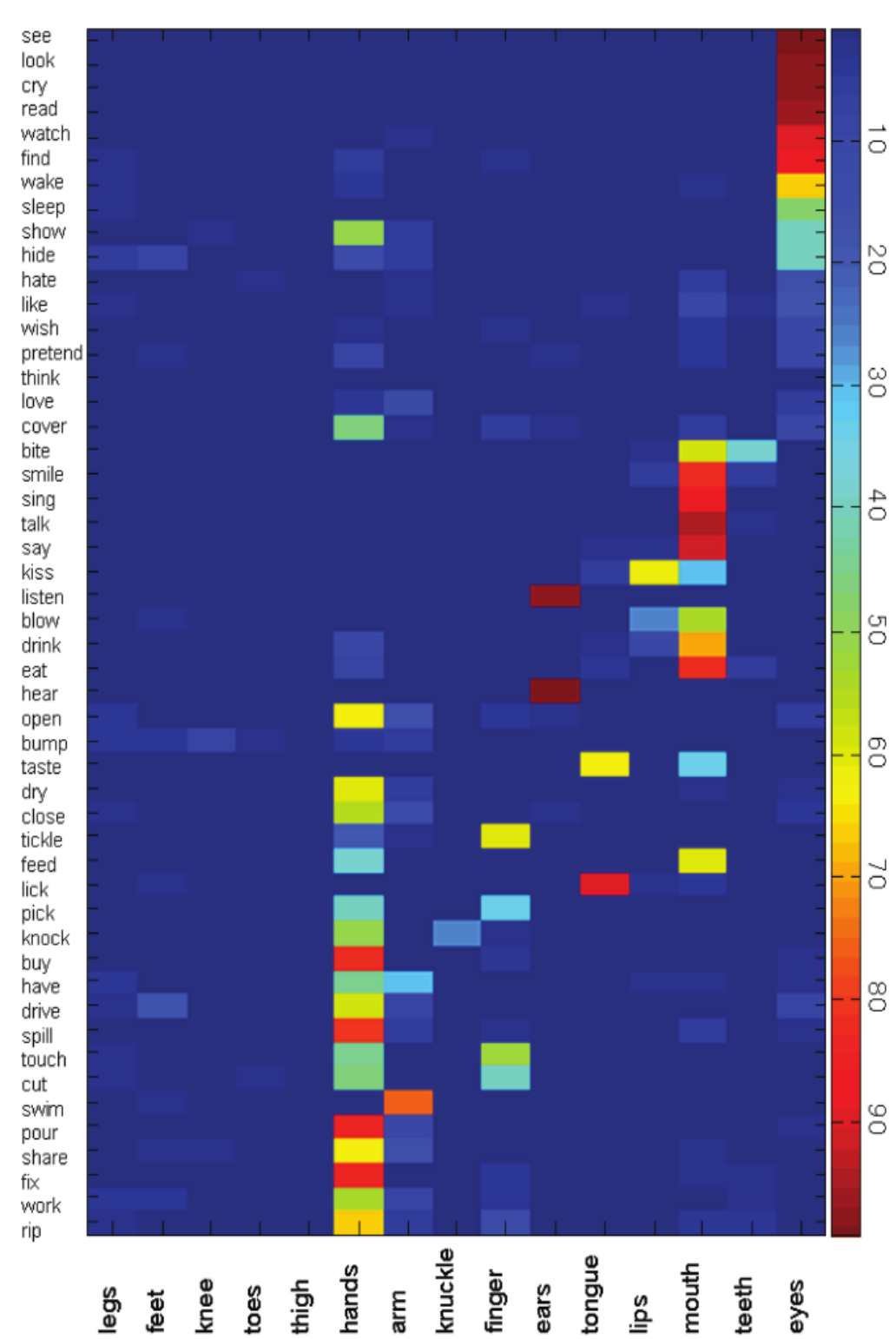
Rabi Shanker Guha

Embodiment

- Embodied mind thesis holds that the nature of the human mind is largely determined by the form of the human body.
- The body stands between the mind and the world and thus the properties of the body itself may shape knowledge.
- When participants hold a pencil in their teeth engaging the muscles of a smile, they comprehend pleasant sentences faster than unpleasant ones and vice versa.
- Merely hearing a verb activates the cortical motor areas relevant to moving the appropriate body part.

The Experiment

- **Participants:**
50 college students + 30 in control group
- **Stimuli:**
101 action terms that are normatively in the productive vocabulary of at least 50% of children learning American English by 30 months of age.
- **Procedure:**
Each was given a randomly ordered list of the 101 verbs and asked to supply the one body part that first came to mind when they thought of each verb.



Similarity Analysis

- Correspondence Analysis on the given data set provides a coherent picture and a high degree of structure.
- The verbs fall into 4 major categories:
 - Ears (*listen, hear*): 100%
 - Hand, arm and fingers (*52 out of 101*)
 - Leg, feet
 - Eyes (*cry, watch, find*)

Second CA analysis

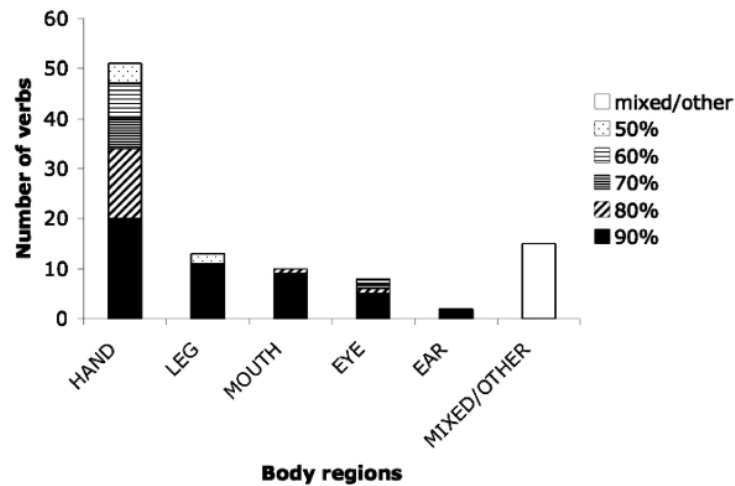


Table 1

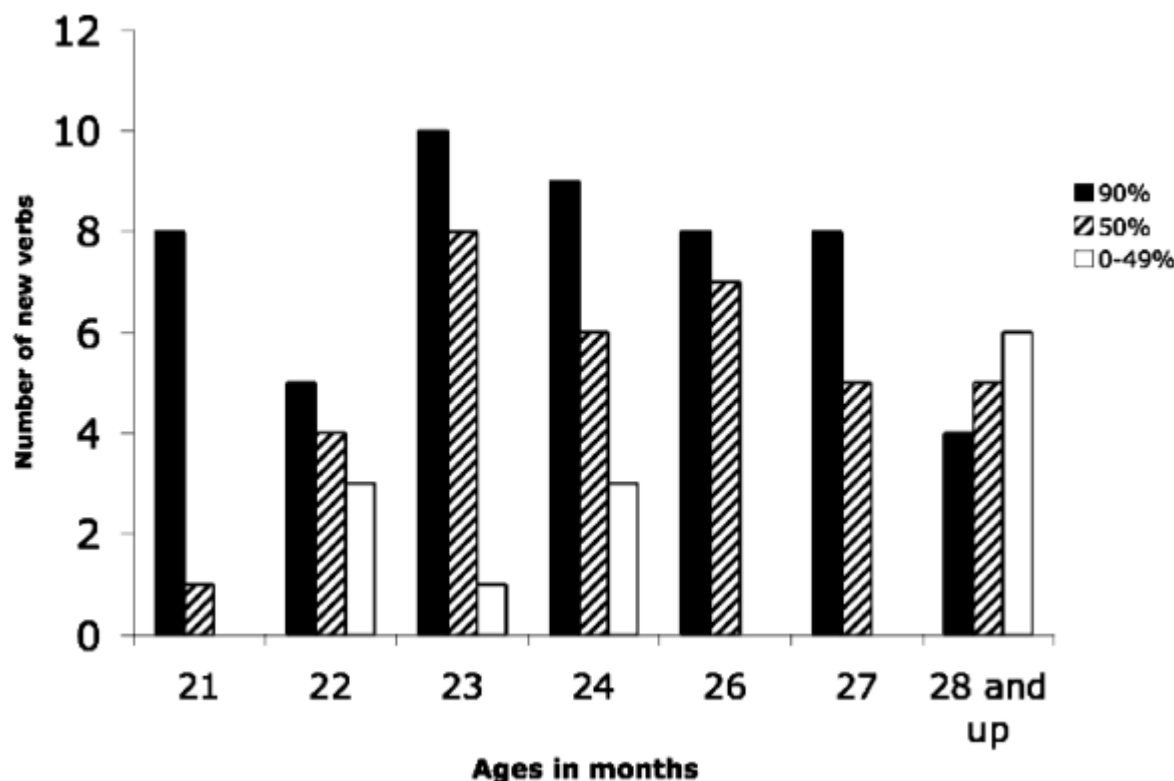
The 15 body-part labels offered by participants that account for 84% of all associations and their five body regions

Region	Body-Part Labels
mouth	MOUTH, TONGUE, LIP, TEETH
eye	EYE
ear	EAR
hand	HAND, ARM, FINGER, KNUCKLE
leg	LEG, FEET, KNEE, THIGH, TOE

Localization

- Although the participants offered a total of 61 unique labels, just 15 unique terms accounted for over 84% of the associations which correspond to the five regions described before.
- In general, adult speakers localize common verbs, including light and relational ones such as give, get, and go, to specific body regions.

Age of acquisition



The age of acquisition for each verb, determined from the MCDI norms, was defined as the youngest age at which 50% of the normative sample was reported to have the verb in their productive vocabulary (Fenson et al., 1994).



Ages 21, 23 and 27 months

Control Study

- Group of 30 people asked to say the first location that comes to their mind when they hear the verb.
- There was little pattern or consistency among the locations generated in the association task for individual verbs
- 824 unique locations which are not easily grouped (only 15% within house)

Embodiment Hypothesis

- Embodiment is used to capture a variety of quite different notions with respect to the meaning and representation—including the idea that even abstract concepts are influenced by and show signature effects of perception–action (e.g., Landy & Goldstone, 2007)
- That abstract concepts are often understood via metaphor to more grounded, concrete, and physical meanings (e.g., Matlock, 2004).
- More radically, that the underlying processes in which meanings are represented are fundamentally sensory-motor in nature (Barsalou, 2003)

Thank you!!