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Supplementary Information for

Decoding the Information Structure Underlying the Neural Representation of Concepts

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This PDF file includes:

Supplementary Text

Figs. S1 to S13

Tables S1 to S7

Captions for Data S1 to S3

Supplementary References

Other Supplementary Materials for this manuscript include the following:

Supplemental Data S1: Statistics from Study 1

Supplemental Data S2: Statistics from Study 2

Supplemental Data S3: Experiential ratings

Supplementary Information Text

Representational Models

WordNet (1) is a lexical database in which words are grouped into sets of synonyms (synsets), each expressing a distinct concept. Word forms with several distinct meanings (homonyms and polysemous words) are represented in as many distinct synsets. Synsets are interconnected according to conceptual-semantic relations. Our WordNet model is based on the superordinate-subordinate relation (hypernymy-hyponymy), which links more general synsets (e.g., “vehicle”) to increasingly specific ones (e.g., “car” and “sedan”). Thus, the WordNet model encodes hierarchical taxonomic information about lexical concepts, such as that the category “vehicle” includes “car”, which in turn includes “sedan”; conversely, concepts like “car” and “sedan” make up the category vehicle. This hierarchical structure is represented as a tree, and all noun hierarchies ultimately go up to the root node (“entity”). We used the Natural Language Toolkit (NLTK 3.4.5; <https://www.nltk.org>) to compute WordNet concept similarity. NLTK implements several methods for computing representational similarity between synsets. We report here the results obtained via the Wu-Palmer method, which achieved the highest RSA performance for WordNet-based RDMs in a preliminary analysis. The method is based on the depth of the two synsets in the taxonomic tree and that of their Least Common Subsumer (LCS, i.e., their most specific common hypernym).

The *Categorical* model encoded superordinate-subordinate relations exclusively for the concepts in each study. It was customized to the stimulus set, such that the categories were chosen to fit the particular set of concepts included in each study. Unlike WordNet, which is structured as a deep taxonomic tree connecting all noun concepts, the Categorical model represented concepts in a shallow tree, consisting of three (Study 1) or two (Study 2) levels. The model included one binary factor (yes/no) per taxonomic category. In Study 1, the model consisted of 19 hierarchically structured categories: Abstract (Mental Abstract, Social Abstract, Social Event, Other Abstract), Event (Social Event, Concrete Event), Animate (Animal, Human, Body Part), Inanimate (Artifact [Musical Instrument, Vehicle, Other Artifact], Food, Other Inanimate), and Place. Concept vector representations were, thus, 19-dimensional. In Study 2, the model consisted of 2 higher-level categories – Object and Event – each consisting of 4 sub-categories (Animal, Food, Tool, and Vehicle; Sound Event, Social Event, Communication Event, and Negative Event), resulting in 10-dimensional vector representations (Figure 2).

The *Exp48* model consists of 48 dimensions corresponding to distinct types of human phenomenal experience (Table S2). The model is based on the experiential salience norms by Binder and colleagues (5). Each dimension encodes the relative importance of an experiential domain according to crowd-sourced ratings on a Likert-type scale obtained via the Amazon Mechanical Turk (AMT) online platform. An important criterion for the inclusion of domains was that they could be mapped onto independently established neurocognitive processes (i.e., processes operationalized independently of semantic tasks). Seventeen components of the experiential salience norms were not included in Exp48: To avoid introducing taxonomic information into the model, we excluded features that, although related to sensory perception, are strongly associated with particular semantic categories, such as Face and Body (humans), Speech and Communication (human communication events), Music (musical instruments), and

1 Biomotion (humans and animals). We also left out features that have not been clearly
2 operationalized independently of conceptual knowledge, such as Cognition, Self, Complexity
3 and Number. Finally, since emotional/affective/interoceptive components are represented in the
4 experiential ratings both in terms of emotion categories (Happy, Sad, Angry, Disgusted, Fearful,
5 Surprised) and of more elementary affective and reward features (Benefit, Harm, Pleasant,
6 Unpleasant, Drive, Needs, Arousal), we included only the latter. The experiential ratings are
7 provided as a separate data file (Supplemental Data S3).

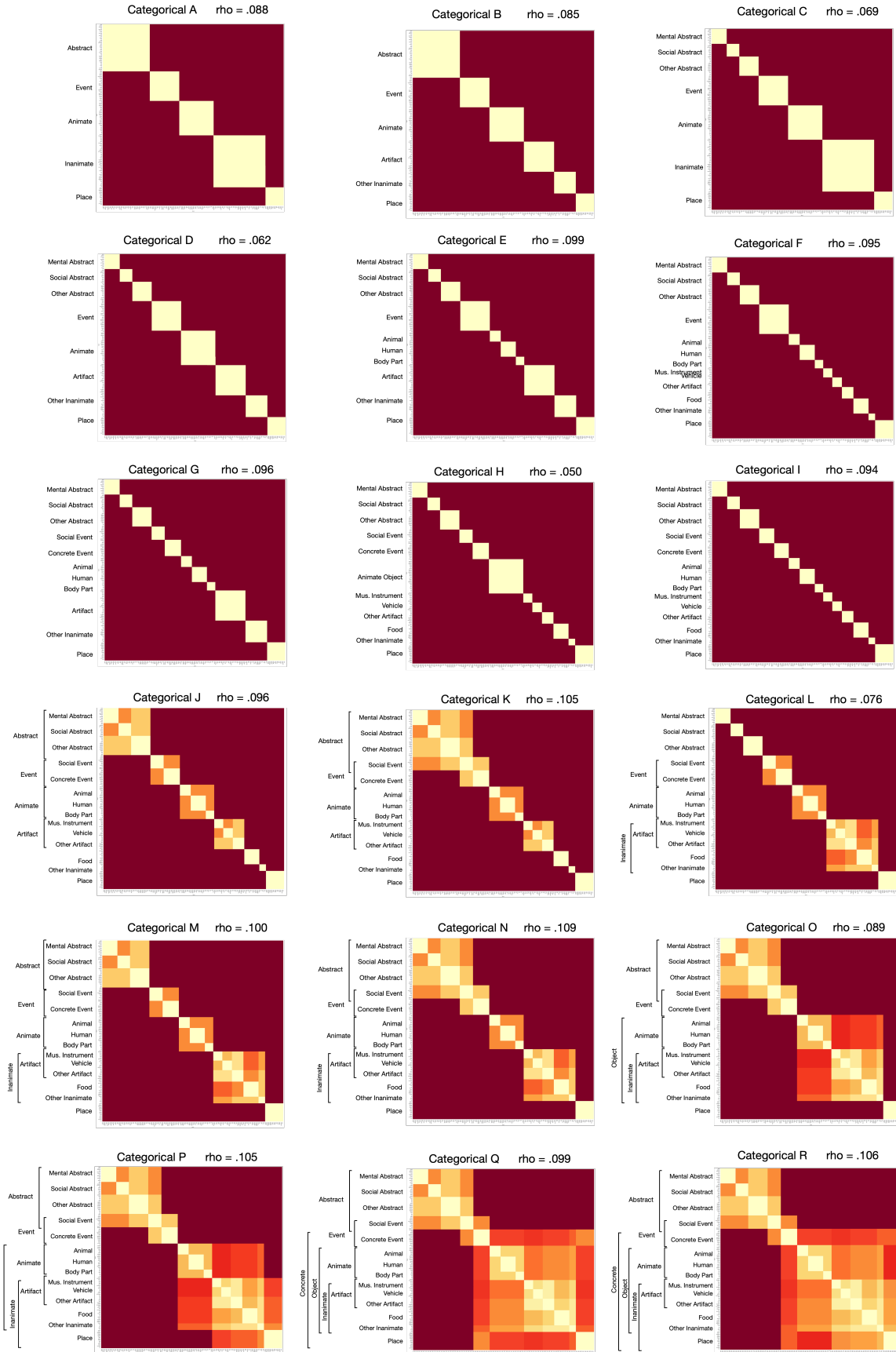
8 The **SM8** model consists of a subset of 5 sensory (vision, audition, touch, taste, smell) and 3
9 motor (hand, foot, mouth) dimensions from Exp48. These dimensions are meant to capture
10 information about the relative level of contribution of each of the major sensory perception
11 domains, and of somato-motor control systems for each of the three main motor effectors, to
12 concept representations stored in multimodal/heteromodal cortex.

13 **word2vec** (2) is a distributional model that, rather than directly computing word co-
14 occurrence frequencies, uses a deep neural network trained to predict a word based on its local
15 context. Unlike Latent Semantic Analysis (LSA), which relies on the global context in which a
16 word occurs, word2vec relies on a context window of a few words preceding and following the
17 target word. In a comparative evaluation of semantic word embeddings (3), word2vec emerged
18 as one of the two top performing models (along with GloVe) in predicting human behavior
19 across a variety of semantic tasks. We used the 300-dimensional word vectors trained on the
20 Google News dataset (approximately 100 billion words) based on the continuous skip-gram
21 algorithm and distributed by Google (<https://code.google.com/archive/p/word2vec>).

22 **GloVe** (4) is a distributional model designed to learn word vectors such that their dot product
23 equals the logarithm of the words' probability of co-occurrence. In contrast to LSA, which
24 directly encodes word co-occurrence probabilities, and to word2vec, which learns to predict
25 words based on their local context, GloVe is based on the *ratio* of co-occurrence probabilities
26 between pairs of words across the entire corpus. It was shown to outperform word2vec on a word
27 analogy task and in several word similarity tasks (4), but the two models performed similarly in
28 the tasks analyzed by Pereira and colleagues (3). We used the 300-dimensional word vectors
29 trained on Common Crawl (840 billion words) and made available by the authors
30 (<https://nlp.stanford.edu/projects/glove>).

31 The **Semantic Feature Production Norms (SFPN)** devised by McRae and colleagues (12)
32 are arguably the largest and best-known effort to characterize word meanings in terms of
33 semantic features, and have been used to test a variety of claims about the organization of the
34 semantic system (13–15). Features are derived from descriptive properties generated by human
35 participants in a property listing task. The properties are subsequently standardized into features
36 with a binary value (present/absent), and their frequencies computed for each concept. This
37 procedure results in vector-based concept representations based on thousands of features. The
38 features represent various types of information, including perceptual (e.g., “is red”, “roars”),
39 taxonomic (e.g., “is a mammal”), functional (e.g., “used for cooking”), and contextual
40 association, as well as more concept-specific types of information (e.g., “lays eggs”, “lives in the
41 water”). We used the list of cosine similarities provided by Buchanan and colleagues (16) to
42 generate the SFPN RDM (downloaded from <https://github.com/doomlab/Word-Norms-2>).

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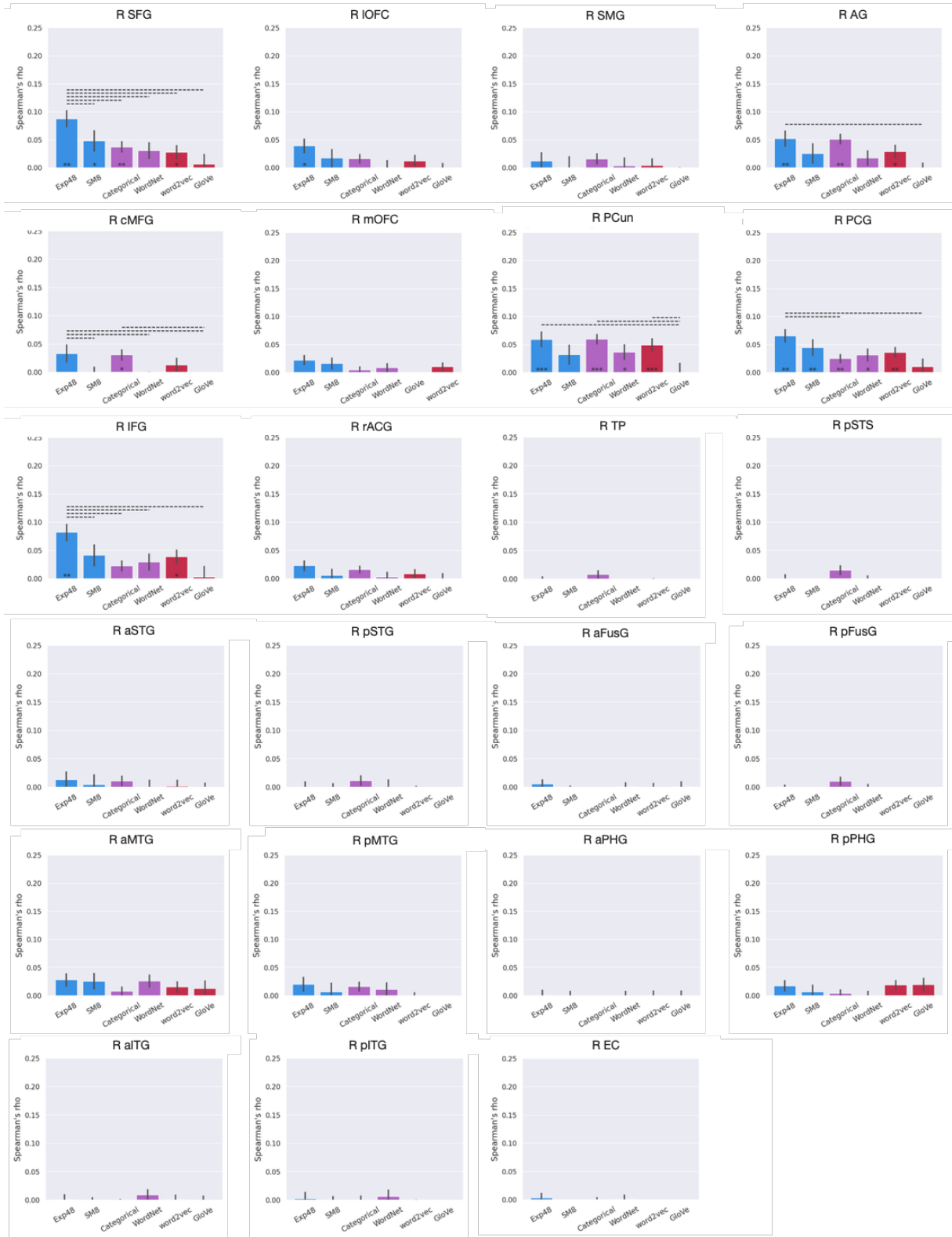
1 **Figure S1.** Categorical models tested for Study 1. Taxonomic structure, representational
2 similarity matrix, and Spearman's rho (computed for the semantic network ROI) for each version
3 tested. The best performing model (N) was selected for the main analyses.
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Figure S2. RSA results (across stimuli) for left hemisphere anatomical ROIs in Study 1. Color and symbol conventions as in Figure 2.



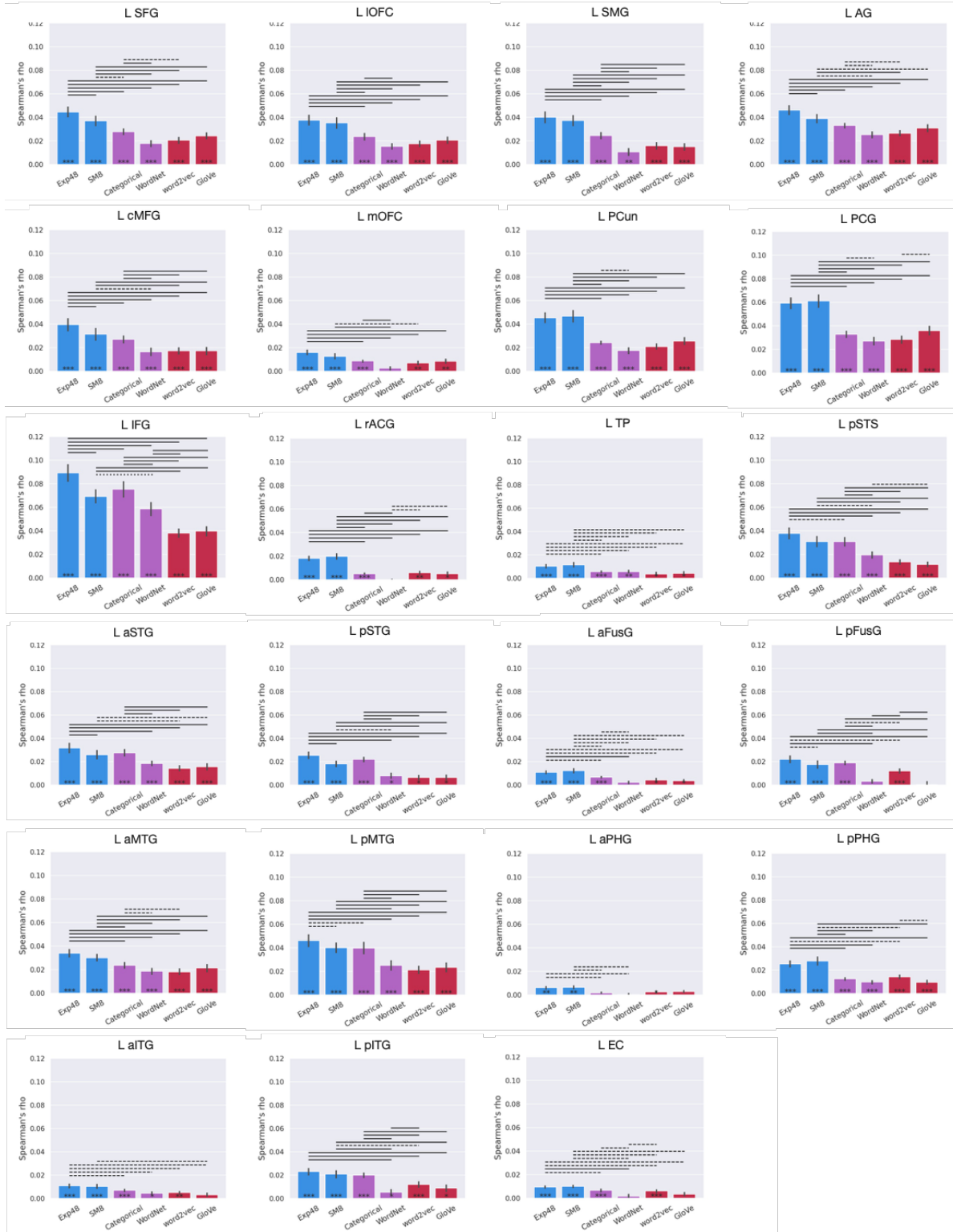
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Figure S3. RSA results (across stimuli) for right hemisphere anatomical ROIs in Study 1. Color and symbol conventions as in Figure 2.

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3 **Figure S4.** RSA results (across participants) for left hemisphere anatomical ROIs in Study 2.
4 Color and symbol conventions as in Figure 3.

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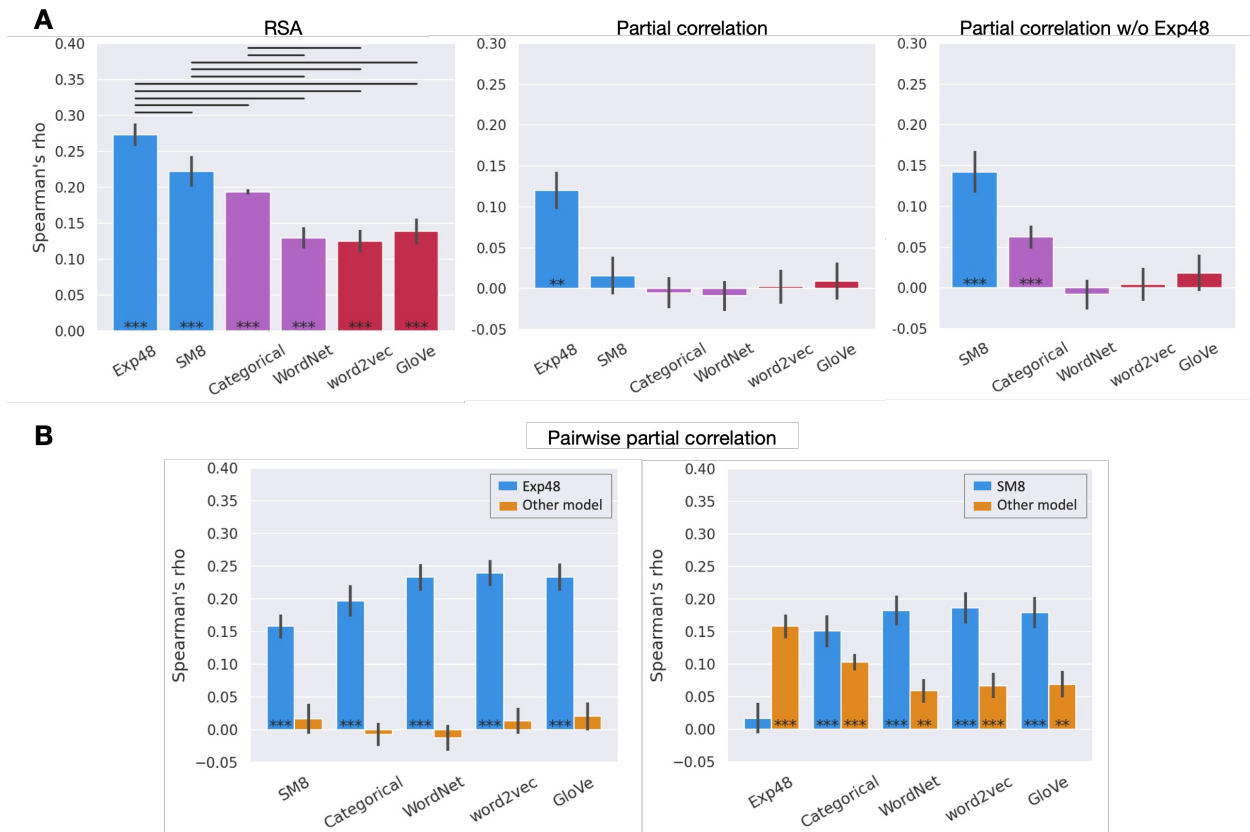
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Figure S5. RSA results (across participants) for right hemisphere anatomical ROIs in Study 2. Color and symbol conventions as in Figure 3.

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Figure S6. RSA results (across stimuli) for the semantic network ROI in Study 2. A. Experiential (blue), taxonomic (purple), and distributional (red) models; Left: Correlations between the group-averaged neural RDM and each model-based RDM. Center: Partial correlation results for each model while controlling for its similarity with all other models. Right: Partial correlation results when Exp48 was excluded from the analysis. B. Pairwise partial correlations for the semantic network ROI; blue bars represent Exp48 (left) or SM8 (right) while controlling for its similarity to each of the other model-based RDMs. Color and symbol conventions as in Figure 2.

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Figure S7. RSA results (across participants) for object concepts (left hemisphere anatomical ROIs). Color and symbol conventions as in Figure 3.



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Figure S8. RSA results (across participants) for object concepts (right hemisphere anatomical ROIs). Color and symbol conventions as in Figure 3.



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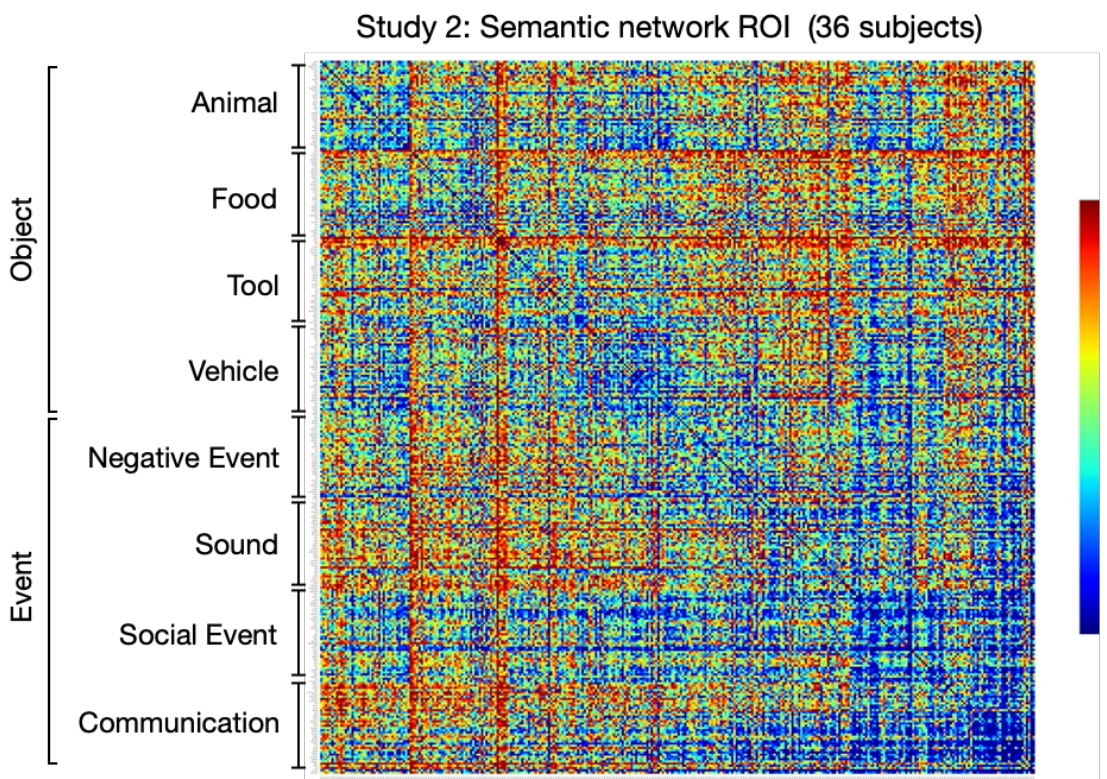
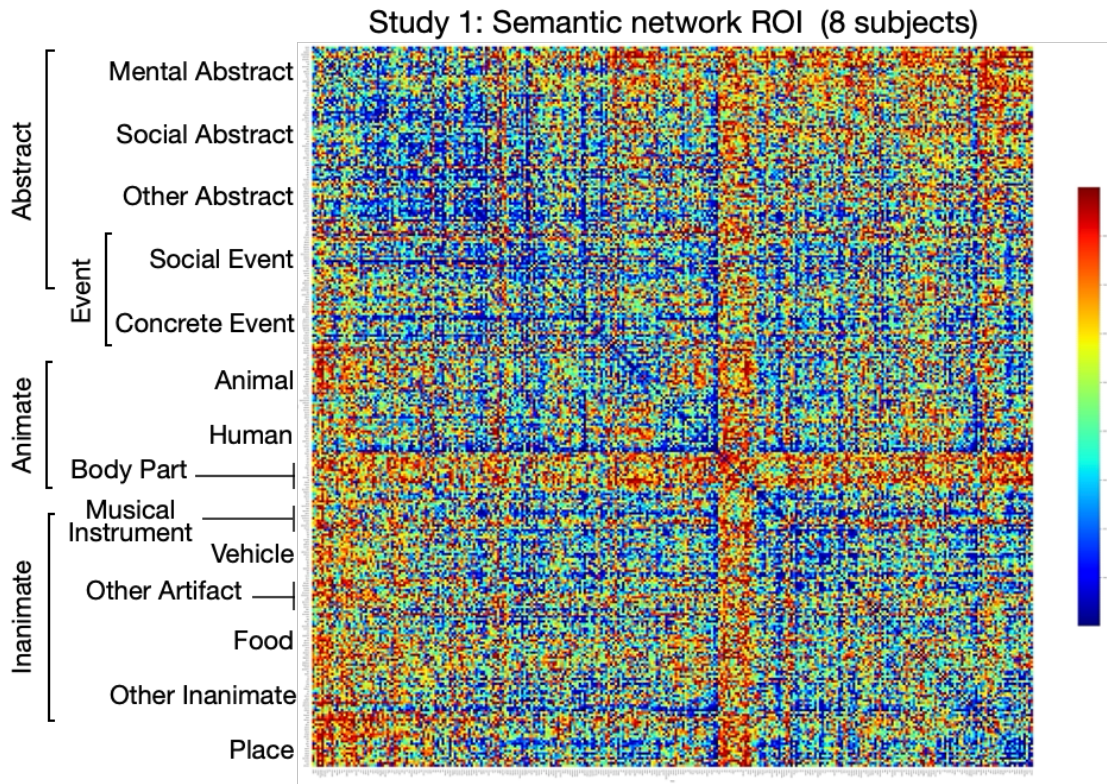
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Figure S9. RSA results (across participants) for event concepts (left hemisphere anatomical ROIs). Color and symbol conventions as in Figure 3.



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2 **Figure S10.** RSA results (across participants) for event concepts (right hemisphere anatomical
 3 ROIs). Color and symbol conventions as in Figure 3.



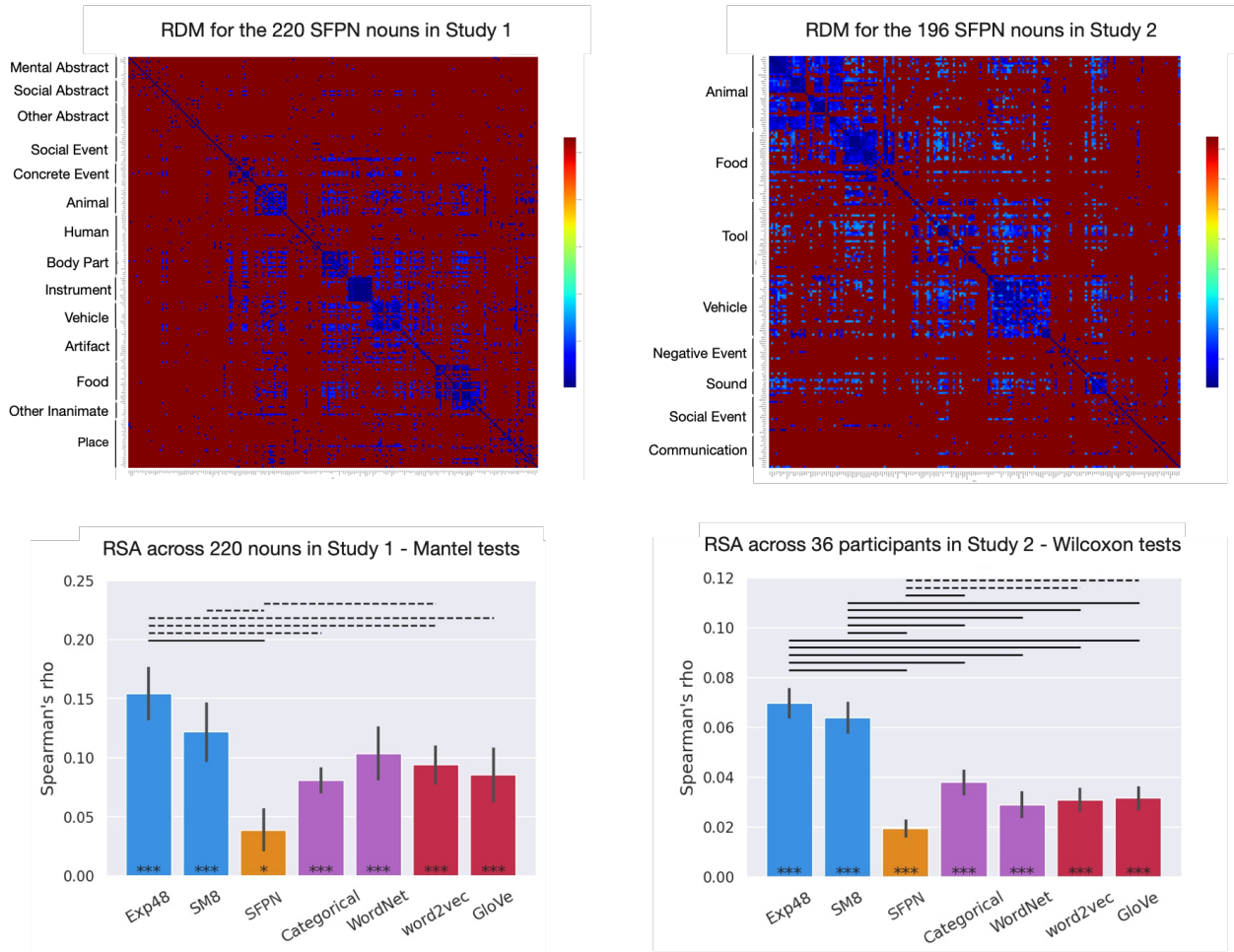
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Figure S11. Neural RDMs, averaged across participants, for the semantic network ROI in Study 1 (top) and Study 2 (bottom).

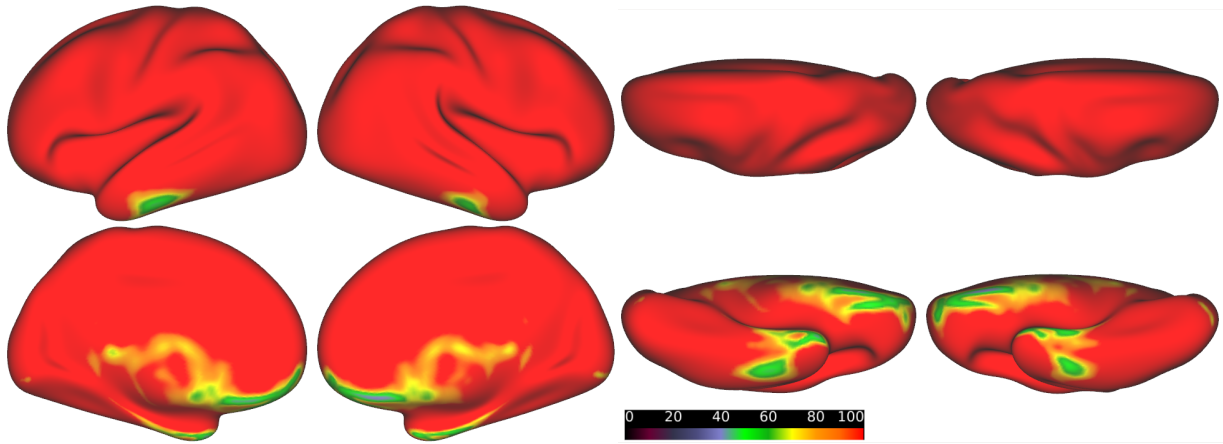
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Figure S12. Top: RDMs for the SFPN models. Bottom: RSA results for the subset of nouns in each study for which SFPN norms are available.

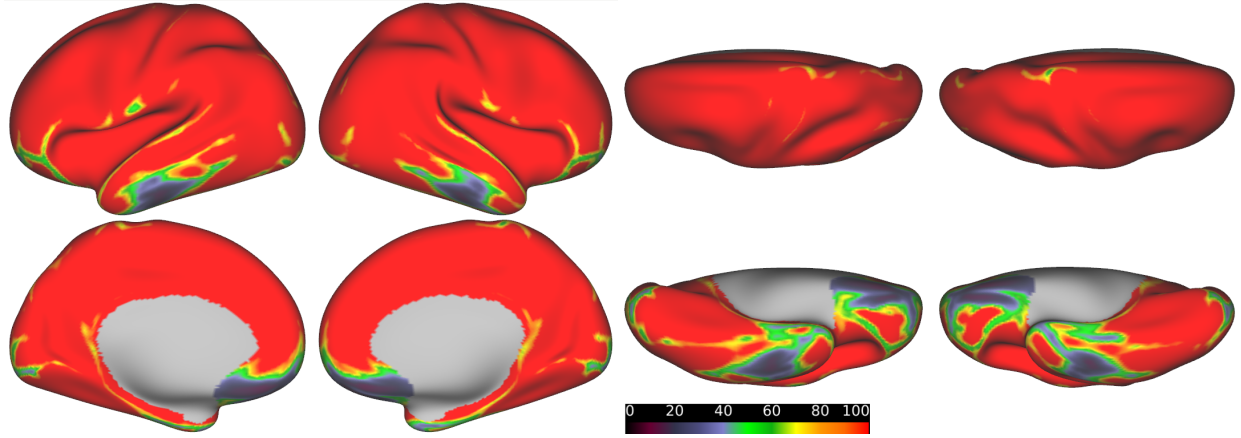
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Figure S13. Temporal SNR maps for Study 1 (top) and Study 2 (bottom).

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Study 1					
	Exp48	SM8	Categorical	WordNet	GloVe
SM8	0.59				
Categorical	0.44	0.18			
WordNet	0.50	0.25	0.43		
GloVe	0.43	0.32	0.23	0.25	
word2vec	0.37	0.25	0.22	0.23	0.60
Study 2					
	Exp48	SM8	Categorical	WordNet	GloVe
SM8	0.77				
Categorical	0.73	0.46			
WordNet	0.51	0.30	0.68		
GloVe	0.45	0.35	0.37	0.26	
word2vec	0.42	0.30	0.39	0.29	0.68

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Table S1.

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Correlations between model-based RDMs in the two studies.

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Dimension	Rating query (to what degree do you think of this thing as...)	High Score Examples
Vision	being something you can easily see	moon, locomotive
Bright	being visually light or bright	sun, lightning
Dark	being visually dark	night, crow
Color	having a characteristic or defining color	grass, banana
Pattern	having a characteristic visual texture or pattern	tiger, pineapple
Motion	having a lot of visually observable movement	tornado, parade
Fast	having visible movement that is fast	rocket, cheetah
Slow	having visible movement that is slow	snail, cloud
Shape	having a characteristic visual shape or form	giraffe, spoon
Large	being large in size	volcano, ferry
Small	being small in size	bacterium, pea
Touch	easily recognizable by touch	toothbrush, sandpaper
Temperature	being either hot or cold to the touch	bonfire, ice
Texture	having either a smooth or rough texture to the touch	silk, stubble
Weight	being either light or heavy in weight	balloon, anvil
Pain	being associated with pain or physical discomfort	headache, bombing
Taste	having a characteristic taste	lemon, chocolate
Smell	having a characteristic smell	tobacco, barbecue
Mouth Action	associated with actions of the mouth	whistle, jaw
Hand Action	associated with actions of the arm, hand or fingers	keyboard, scissors
Foot Action	associated with actions of the legs or feet	soccer, bicycle
Manipulation	a physical object you have personally manipulated	fork, computer
Landmark	having a fixed location, as on a map	airport, library
Near	being near you, within reaching distance	foot, chair
Scene	belonging to a particular setting or physical location	oven, beach
Sound	having a characteristic or recognizable sound	rooster, piano
Audition	being something that you can easily hear	siren, thunder
Loud	making a loud sound	explosion, megaphone
Low pitch	having a low-pitched sound	tuba, growling
High pitch	having a high-pitched sound	whistle, dolphin
Path	showing motion along a particular direction or path	rocket, trolley
Toward	being associated with movement toward you	food, embrace
Away	being associated with movement away from you	cough, kite
Time	an event that occurs at a typical or predictable time	lunch, night
Duration	having a predictable duration, whether short or long	movie, year
Long Duration	an event that lasts for a long period of time	life, infinity
Short Duration	an event that lasts for a short period of time	sneeze, gunshot
Caused	caused by a preceding event, action, or situation	spill, honeymoon
Consequential	likely to have consequences	invasion, earthquake
Intention	having human-like intentions, plans, or goals	lobbyist, activist
Benefit	something that could help or benefit you or others	cure, peace
Harm	something that could cause harm to you or others	epidemic, wildfire

Drive	something that motivates you to do something	duty, hope
Needs	something that would be hard to live without	shelter, water
Attention	someone or something that grabs your attention	scream, lightning
Pleasant	something that you find pleasant	vacation, cake
Unpleasant	something that you find unpleasant	pain, bombing
Arousal	something that makes you feel alert or excited	rollercoaster, lust

1 **Table S2.**
2 Dimensions included in the Exp48 model.
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	Letters	Phonemes	Syllables	Log Frequency	ON	PN	Age of Acquisition	Concreteness
Minimum	3	1	1	4.0	0	0	2.7	1.2
Maximum	11.0	9.0	5.0	12.7	19	40	13.8	5.0
Mean	5.9	4.9	1.9	8.7	3.6	7.6	6.7	4.1

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Table S3.
 Lexical properties of the nouns included in Study 1. ON = orthographic neighborhood size. PN = phonological neighborhood size. Log frequency, ON, and PN are based on the HAL corpus. All data were compiled by the English Lexicon Project (8) (<https://elexicon.wustl.edu/>).

Word	Category	Word	Category	Word	Category
belief	mental	sin	social abstract	battle	social event
hope	mental	snub	social abstract	carnival	social event
intellect	mental	testimony	social abstract	circus	social event
knowledge	mental	treaty	social abstract	debate	social event
optimism	mental	tribute	social abstract	speech	social event
sympathy	mental	truce	social abstract	election	social event
trust	mental	trial	social abstract	festival	social event
wit	mental	attribute	abstract	funeral	social event
animosity	mental	year	abstract	honeymoon	social event
awe	mental	curse	abstract	matinee	social event
delirium	mental	worth	abstract	meeting	social event
dread	mental	day	abstract	oration	social event
envy	mental	fate	abstract	party	social event
fun	mental	fee	abstract	bonfire	social event
gratitude	mental	folly	abstract	rally	social event
grief	mental	era	abstract	vacation	social event
guilt	mental	heredity	abstract	musical	social event
ire	mental	home	abstract	soccer	social event
jealousy	mental	semester	abstract	riot	social event
joy	mental	hygiene	abstract	parade	social event
love	mental	infinity	abstract	applause	social event
malice	mental	majority	abstract	dinner	social event
shame	mental	number	abstract	embrace	concrete event
torment	mental	morning	abstract	handshake	concrete event
woe	mental	peace	abstract	kiss	concrete event
victim	social abstract	problem	abstract	avalanche	concrete event
bribe	social abstract	quantity	abstract	belch	concrete event
deceit	social abstract	evening	abstract	clang	concrete event
etiquette	social abstract	reality	abstract	cough	concrete event
fallacy	social abstract	accident	abstract	cyclone	concrete event
grievance	social abstract	role	abstract	downpour	concrete event
insult	social abstract	patent	abstract	explosion	concrete event
joke	social abstract	winter	abstract	fireworks	concrete event
loan	social abstract	sum	abstract	flood	concrete event
mercy	social abstract	summer	abstract	gasp	concrete event
moral	social abstract	tax	abstract	gunshot	concrete event
perjury	social abstract	truth	abstract	hailstorm	concrete event
plea	social abstract	vice	abstract	hurricane	concrete event
rumor	social abstract	night	abstract	landslide	concrete event

Word	Category	Word	Category	Word	Category
lightning	concrete event	girl	human	saxophone	instrument
ricochet	concrete event	guard	human	trombone	instrument
whine	concrete event	farmer	human	trumpet	instrument
scream	concrete event	voter	human	tuba	instrument
screech	concrete event	doctor	human	ambulance	vehicle
squeal	concrete event	driver	human	bicycle	vehicle
stampede	concrete event	worker	human	boat	vehicle
storm	concrete event	army	human group	bus	vehicle
thunder	concrete event	audience	human group	cab	vehicle
tornado	concrete event	choir	human group	car	vehicle
alligator	animal	couple	human group	carriage	vehicle
ant	animal	jury	human group	plane	vehicle
bee	animal	mob	human group	sailboat	vehicle
butterfly	animal	family	human group	scooter	vehicle
camel	animal	arm	body part	sled	vehicle
cheetah	animal	eye	body part	submarine	vehicle
crow	animal	foot	body part	subway	vehicle
elephant	animal	hair	body part	train	vehicle
turtle	animal	hand	body part	truck	vehicle
whale	animal	finger	body part	van	vehicle
goldfish	animal	toe	body part	axe	artifact
hawk	animal	jaw	body part	ball	artifact
snake	animal	leg	body part	baseball	artifact
tiger	animal	shoulder	body part	bed	artifact
monkey	animal	lip	body part	bell	artifact
moose	animal	mouth	body part	comb	artifact
mosquito	animal	muscle	body part	dime	artifact
penguin	animal	nose	body part	door	artifact
boy	human	accordion	instrument	elevator	artifact
criminal	human	bagpipe	instrument	escalator	artifact
businessman	human	chime	instrument	fountain	artifact
politician	human	clarinet	instrument	football	artifact
soldier	human	drum	instrument	limousine	artifact
student	human	flute	instrument	newspaper	artifact
terrorist	human	gong	instrument	pan	artifact
tourist	human	harmonica	instrument	rocket	artifact
parent	human	harp	instrument	television	artifact
patient	human	mandolin	instrument	tobacco	artifact
man	human	piano	instrument	window	artifact

Word	Category	Word	Category
beer	food	feather	inanimate
cheese	food	ice	inanimate
chocolate	food	sun	inanimate
corn	food	school	manmade place
egg	food	store	manmade place
honey	food	theater	manmade place
jam	food	cafeteria	manmade place
lemonade	food	cathedral	manmade place
mustard	food	church	manmade place
pie	food	college	manmade place
rum	food	hall	manmade place
spaghetti	food	hospital	manmade place
tea	food	hotel	manmade place
apricot	food	kitchen	manmade place
banana	food	lab	manmade place
blueberry	food	office	manmade place
carrot	food	prison	manmade place
cherry	food	airport	manmade place
chestnut	food	street	manmade place
coffee	food	bridge	manmade place
eggplant	food	garden	manmade place
plum	food	park	manmade place
raspberry	food	zoo	manmade place
tangerine	food	farm	manmade place
tomato	food	bay	natural place
dandelion	inanimate	beach	natural place
elm	inanimate	forest	natural place
flower	inanimate	island	natural place
ivy	inanimate	jungle	natural place
oak	inanimate	mountain	natural place
rose	inanimate	prairie	natural place
tulip	inanimate	river	natural place
cloud	inanimate	volcano	natural place

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Table S4.
Noun stimuli included in Study 1.

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	Letters	Phonemes	Syllables	Log Frequency	ON.	PN	Age of Acquisition	Concreteness
Minimum	3	2	1	2.94	0	0	2.7	2.1
Maximum	13	11	5	12.44	18	41	14.8	5.0
Mean	6.9	5.7	2.1	7.61	2.2	5.1	7.2	4.2
Mean Object	6.7	5.5	2.1	7.66	2.4	5.7	6.0	4.9
Mean Event	7.2	5.8	2.2	7.57	1.9	4.5	8.4	3.6

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Table S5.

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Lexical properties of the nouns included in Study 2.

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Word	Category	Word	Category	Word	Category
alligator	animal	whale	animal	tobacco	food
ant	animal	asparagus	food	tomato	food
baboon	animal	banana	food	anchor	tool
bison	animal	bean	food	axe	tool
butterfly	animal	beer	food	baseball	tool
cardinal	animal	blueberry	food	binoculars	tool
caterpillar	animal	bread	food	book	tool
chameleon	animal	broccoli	food	calculator	tool
cheetah	animal	carrot	food	camera	tool
chicken	animal	champagne	food	candle	tool
chimpanzee	animal	cheese	food	cash	tool
chipmunk	animal	cherry	food	comb	tool
cricket	animal	chestnut	food	corkscrew	tool
crow	animal	chocolate	food	crutches	tool
dog	animal	cider	food	dime	tool
dolphin	animal	coffee	food	faucet	tool
duck	animal	cranberry	food	football	tool
elephant	animal	cucumber	food	fork	tool
fish	animal	custard	food	glass	tool
goldfish	animal	dandelion	food	hairbrush	tool
hamster	animal	egg	food	hammer	tool
hawk	animal	eggplant	food	handsaw	tool
hippopotamus	animal	flower	food	hoe	tool
horse	animal	ham	food	key	tool
jackal	animal	honey	food	keyboard	tool
lion	animal	jam	food	ladle	tool
monkey	animal	ketchup	food	magazine	tool
moose	animal	lemonade	food	microscope	tool
mosquito	animal	milk	food	newspaper	tool
mouse	animal	mushroom	food	pencil	tool
octopus	animal	mustard	food	rake	tool
penguin	animal	nectarine	food	sandpaper	tool
rhinoceros	animal	pineapple	food	scissors	tool
salmon	animal	plant	food	skillet	tool
snake	animal	pudding	food	spatula	tool
tiger	animal	pumpkin	food	stapler	tool
trout	animal	raspberry	food	stethoscope	tool
turkey	animal	sauerkraut	food	straw	tool
turtle	animal	spaghetti	food	thermometer	tool

Word	Category	Word	Category	Word	Category
ticket	tool	trolley	vehicle	twister	negative event
tongs	tool	truck	vehicle	volcano	negative event
umbrella	tool	van	vehicle	war	negative event
ambulance	vehicle	wagon	vehicle	whirlwind	negative event
automobile	vehicle	avalanche	negative event	wildfire	negative event
barge	vehicle	battle	negative event	applause	sound
bicycle	vehicle	blizzard	negative event	bang	sound
boat	vehicle	bombing	negative event	bellowing	sound
bobsled	vehicle	brawl	negative event	boom	sound
bus	vehicle	cyclone	negative event	chattering	sound
canoe	vehicle	downpour	negative event	chuckle	sound
car	vehicle	drought	negative event	clapping	sound
carriage	vehicle	earthquake	negative event	clattering	sound
convertible	vehicle	epidemic	negative event	crackle	sound
elevator	vehicle	explosion	negative event	crescendo	sound
escalator	vehicle	famine	negative event	giggle	sound
ferry	vehicle	flood	negative event	groaning	sound
glider	vehicle	gunshot	negative event	growling	sound
helicopter	vehicle	gust	negative event	grunt	sound
jeep	vehicle	hail	negative event	gulp	sound
limousine	vehicle	hailstorm	negative event	hiccup	sound
locomotive	vehicle	hurricane	negative event	jingle	sound
motorcycle	vehicle	inferno	negative event	laughter	sound
plane	vehicle	invasion	negative event	melody	sound
rocket	vehicle	landslide	negative event	murmuring	sound
rowboat	vehicle	lightning	negative event	reverberation	sound
sailboat	vehicle	monsoon	negative event	roaring	sound
scooter	vehicle	murder	negative event	rumble	sound
skateboard	vehicle	outbreak	negative event	rustle	sound
sled	vehicle	plague	negative event	screaming	sound
sleigh	vehicle	raid	negative event	screeching	sound
steamer	vehicle	riot	negative event	shrieking	sound
streetcar	vehicle	shooting	negative event	sigh	sound
submarine	vehicle	squall	negative event	siren	sound
subway	vehicle	stampede	negative event	sizzle	sound
taxi	vehicle	storm	negative event	snap	sound
tractor	vehicle	tempest	negative event	sneeze	sound
train	vehicle	thunderstorm	negative event	sobbing	sound
tricycle	vehicle	tornado	negative event	squeaking	sound

Word	Category	Word	Category	Word	Category
squeal	sound	luncheon	social event	discourse	communication
thumping	sound	march	social event	dispute	communication
thunderclap	sound	musical	social event	eulogy	communication
wheezing	sound	outing	social event	greeting	communication
whimpering	sound	pageant	social event	grievance	communication
whine	sound	parade	social event	huddle	communication
banquet	social event	party	social event	interrogation	communication
bash	social event	picnic	social event	joke	communication
carnival	social event	prom	social event	lecture	communication
celebration	social event	rally	social event	lesson	communication
christening	social event	reception	social event	meeting	communication
circus	social event	reunion	social event	plea	communication
cocktails	social event	safari	social event	praise	communication
concert	social event	symphony	social event	protest	communication
conference	social event	tour	social event	quarrel	communication
contest	social event	tournament	social event	rant	communication
convention	social event	wedding	social event	rebuke	communication
cookout	social event	advice	communication	rebuttal	communication
cruise	social event	apology	communication	recitation	communication
dance	social event	class	communication	sermon	communication
expedition	social event	commemoration	communication	showdown	communication
expo	social event	comment	communication	squabble	communication
fair	social event	commentary	communication	testimony	communication
feast	social event	complaint	communication	thanks	communication
festival	social event	compliment	communication	threat	communication
fiesta	social event	debate	communication	trial	communication
gathering	social event	denial	communication	tribute	communication
housewarming	social event	deposition	communication	wisecrack	communication
jubilee	social event	dictation	communication		

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Table S6.

4

Noun stimuli included in Study 2.

5

ROI	Study 1	Study 2
L AG	151	125
R AG	154	138
L SMG	157	129
R SMG	165	143
L PCun	141	125
R PCun	148	134
L PCG	126	121
R PCG	131	121
L lat OFC	95	70
R lat OFC	93	74
L mOFC	59	33
R mOFC	63	38
L SFG	153	133
R SFG	153	128
L cMFG	146	130
R cMFG	149	132
L IFG	137	109
R IFG	128	117
L rAC	124	102
R rAC	136	106
L pSTS	136	126
R pSTS	179	159
L aSTG	134	102
R aSTG	138	109
L pSTG	172	108
R pSTG	177	123
L aMTG	150	70
R aMTG	149	78
L pMTG	174	86
R pMTG	163	97
L aITG	106	34
R aITG	111	36
L pITG	137	67
R pITG	127	69
L aFusG	87	29
R aFusG	82	33
L pFusG	148	106
R pFusG	137	106
L aPHG	98	42

R aPHG	86	37
L pPHG	107	93
R pPHG	105	93
L EC	81	42
R EC	80	28
L TP	80	53
R TP	81	46

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Table S7
Mean group-averaged tSNR for each anatomically defined ROI.

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2 **Supplemental Data S1 (separate file).** RSA results from Study 1.
3 Fernandino2021_DecodInfoStruct_S1_RSA_tables.xlsx
4 Study 1: RSA results
5 Study 1: RSA partial correlation results
6 Study 1: Pairwise partial correlations for all concepts (Exp48)
7 Study 1: Pairwise partial correlations for all concepts (SM8)
8
9 **Supplemental Data S2 (separate file).** RSA results from Study 2.
10 Fernandino2021_DecodInfoStruct_S2_RSA_tables.xlsx
11 Study 2: RSA results for all concepts
12 Study 2: RSA results for object concepts
13 Study 2: RSA results for event concepts
14 Study 2: RSA partial correlation results for all concepts
15 Study 2: RSA partial correlation results for object concepts
16 Study 2: RSA partial correlation results for event concepts
17 Study 2: Pairwise partial correlations for all concepts
18 Study 2: Pairwise partial correlations for object concepts
19 Study 2: Pairwise partial correlations for event concepts
20
21 **Supplemental Data S3 (separate file).** Experiential ratings.
22 Fernandino2021_DecodInfoStruct_S3_Exp_ratings.xlsx
23

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