Discourse behavior of possessives reflects the importance of interpersonal relationships

A principal property of discourse-level representations of meaning is that referents in a discourse vary in prominence, e.g. animates are typically more prominent than inanmites [1,2]. Explaining why differences in prominence arise is a core task for theories of discourse representation and processing. However, prior work has neglected a frequent structure with potential to inform current theories: nominal possessives (e.g. Sam’s car, Sam’s doctor). Unlike simpler nominals (a car/doctor), nominal possessives reference two entities: a possessor (Sam) and a possession (car/doctor). Drawing on work in linguistic meaning and cognition more generally, we test three hypotheses about animate and inanimate possessions’ prominence.

H1: Animates are more frequently pronominalized [3], mentioned earlier [4], and persist in memory (in both a linguistic and domain-general sense) more than inanmites [5]. According to the Animacy Hypothesis, animate possessions (Sam’s doctor) are more prominent in discourse than inanimate ones (Sam’s car) for the same reasons and to the same extent that simpler nominals exhibit animacy effects (a doctor vs. a car).

H2: Possessives are referentially and semantically more complex than simpler nominals, and increased representational complexity promotes accessibility in memory [6]. Additionally, possessives can be discourse-new or given [7], unlike simpler indefinites, and given referents tend to be more prominent [8] (we leave definites for future work). On this basis, we consider the Possessive Hypothesis: possessives are more prominent than simpler indefinite nominals.

H3: Work in social cognition and neuroscience associates interpersonal relationships and health [9,10]. Relatedly, evolutionary theories claim that better memory for animates arose from selection pressures to identify threats, mates, and social groups [11]. As animate possessions explicitly denote interpersonal relationships, we consider the Interaction Hypothesis: possessed animates are especially prominent in discourse, in excess of additive effects of animacy and possession, due to the domain-general cognitive significance of interpersonal relationships.

Method: We used a sentence-continuation task, which is commonly regarded to reflect the prominence of competing discourse entities [12]. Participants (n=40) wrote continuations to prompt sentences (24 targets, 32 fillers). Targets followed the frame: [name] [nonce verb] [indefinite/possessive] [animate/inanimate]. We manipulated (i) the animacy of the direct object (human role nouns vs. alienable objects) and (ii) whether the direct object was possessed or indefinite. An example target item in the resulting four conditions is given below:

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The name and animate object within an item mismatched with respect to stereotypical gender to minimize referential ambiguity; gender order and frequency was counterbalanced. Nonce verbs minimized potential effects of verb semantics (e.g. from implicit causality [13]). Post-hoc analyses found no consistent biases in the how participants treated individual nonce verbs.

Analysis: Given prior claims that realization in subject position reflects prominence [12,14,15], we analyze how often the direct object from the prompt sentence is mentioned as the subject of the continuation. We also analyze how often the preceding object is mentioned anywhere in the continuation (see e.g. Centering Theory [16]), as a more holistic measure.

Predictions: The Animacy Hypothesis predicts that participants will mention animate objects more often than inanimate and that animacy effects in possessives will parallel those in indefinites; the Possessive Hypothesis predicts possessed objects will be mentioned more than indefinites. The Interaction Hypothesis predicts superadditive effects for possessed animates.

Results: Figure 1 shows mentions of the preceding direct object in subject position of continuations. Animate preceding objects are more likely than inanimate ones to be mentioned in subject position (glmer, p<.001), but, crucially, we also find an animacy:possession interaction (p=.05). A planned comparison shows that possessed animates are more likely than indefinite animates to be continuation subjects (p=.03).
Possession’s special effect on animates is also demonstrated in the analysis of how often preceding objects are mentioned anywhere in continuations (Figure 2). We again see an animacy:possession interaction (p<.01), whereby possession boosts the likelihood of mention for animate objects more than it does for inanimates. Pronominalization patterns (not shown here) reveal a strong bias for reference to the preceding subject and support previous arguments for a dissociation between likelihood of re-mention and pronominalization [17].

The data support the Interaction Hypothesis—that possessed animates are especially prominent, as measured by their likelihood of re-mention. Their privileged status in discourse may relate to non-linguistic theories on the importance of interpersonal relationships [9,10,11]. More broadly, this work is representative of how general cognitive principles may influence the computation of linguistic meaning.