**The agent preference in sentence planning is modulated by case marking: Eye tracking evidence from Hindi, Basque and Swiss German**

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A well-established principle of cognition is a preference for agents. It is instantiated in sentence comprehension [1–5], gesture production [6], and in global distributions of grammatical patterns [7,8]. However, little is known about the role of the agent preference in sentence planning. While standard models of sentence production assume that the first arguments that speakers plan are subjects [9], which are most often agents, the degree to which the time course of planning is shaped by how a language's grammar marks agents is unknown. We tested whether and how speakers' visual attention in the earliest planning stages is modulated when languages use special "ergative" markers on agents, either generally or conditionally. In Hindi, ergatives are conditioned by transitive syntax and perfective aspect, with all other agents and all intransitive subjects appearing in the nominative. In Basque, ergatives are used generally on agents (transitive or intransitive), while patients appear in the nominative. We contrasted this with Swiss German as control that lacks ergatives. In two eye tracking studies, participants described pictures of agent-patient events with SOV sentences [10]. We made two predictions: (1) the agent preference is upheld despite the difference between case marking and we thus expected speakers to direct their initial attention primarily towards agents because these are the instigators of events [11] and therefore central for relational encoding [10]. (2) In conditional case marking systems, initial agent attention is reduced by more extensive relational encoding when speakers plan ergative-initial sentences which contrast with nominative-initial sentences because more event information encoding is necessary to decide between producing an intransitive or a transitive sentence. By contrast, identification of an agent may be sufficient for deciding on the case marking in unconditional systems.
The first study focused on the language-internal contrast in Hindi. In a between-subjects design, we compared the allocation of early visual attention to agents during the planning of sentences with nominative agents and ergative agents (25 participants in each group). Hierarchical Bayesian growth curve regression [12,13] (statistically controlling for speech onset latencies and NP length) revealed that while agents were preferentially fixated from the outset of planning, independent of case marking, speakers directed less visual attention to agents in early planning (200-800 ms after picture onset) when they planned ergative-initial sentences. The second study contrasted Basque (transitive subjects always ergative-marked, 40 speakers) with Swiss German (subjects always unmarked, 26 speakers). In both languages, speakers also preferentially fixated agents but we did not find differences based on the different case marking systems (the bulk of posterior probability masses of relevant predictor coefficients laid around zero). In sum, the agent preference is generally confirmed by our studies, since in all three languages speakers allocated most of their visual attention to the agents in the pictures for early

relational encoding. This preference is modulated, however, by whether speakers need to make a decision about producing an ergative- or a nominative marked agent (Hindi) or whether transitive agent subjects are consistently marked (Basque and Swiss German).

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