
Towards a Semantic-Pragmatic Dual-Process Model of Framing Effects

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The term *framing effect* (FE) refers to the phenomenon that choices and judgments are systematically altered by changing the description of states of affairs. For example, a program to combat a disease expected to kill 600 people is more often endorsed if it is framed in terms of the number of people who will survive rather than die (see (1)).

(1) If Program 1 is adopted, [200 people will survive] / [400 people will die].

FEs are empirically well-established. Yet, their source remains controversial. We aim to account for FEs via a semantic-pragmatic approach inspired by experimental findings on effects of numeral modification with *at least* (Mandel 2014) and *more than* and *fewer than* (Claus 2019). These findings are complemented by new results from experiments in which we addressed the difference between *at most* and *up to*. Both numeral modifiers are upper-bounding. However, they exhibit a sharp contrast in evaluative contexts. In our experiments, we found a reversed FE for numeral modification with *at most* as in (2), and a standard FE for numeral modification with *up to* as in (3). These findings are challenging for all extant accounts of FEs. However, they can be captured in a semantic-pragmatic dual-process model.

(2) ... [at most 200 people will survive] / [at most 400 people will die].

(3) ... [up to 200 people will survive] / [up to 400 people will die].

We propose that the source of FEs is that different frames make different partial outcomes of a two-edged issue salient. By default, the salient part is that the given predicate (e.g. *survive* or *die*) holds for some instances. However, downward-entailing modifiers may make the complement set salient. FEs emerge if judgments are based on the immediate valence appraisal of the salient partial information. FEs are less likely to occur on the basis of deliberate reasoning processes. However, such controlled processes may be affected by numeral modifiers, e.g. argumentative and persuasive inferences and quantity implicatures. This account may be incorporated into a computational model by building on implementations of dynamic stochastic dual process modelling (e.g. Diederich & Trueblood, 2018).

References: • Claus, B. (2019). Framing effects as a semantic puzzle: Putting the alignment-assumption account to a test. In *Proceedings of Sinn und Bedeutung 23*, Vol. 1 (pp. 249-266). • Diederich, A. & Trueblood, J.S. (2018). A dynamic dual process model of risky decision making. *Psychological Review*, 125, 270–292. • Mandel, D.R. (2014). Do framing effects reveal irrational choice? *JEP: General*, 143, 1185-1198.