**Investigation of semantic representations of quantifiers with the Diffusion Decision Model**

Sonia Ramotowska
Heinrich Heine University Düsseldorf

Fabian Schlotterbeck
University of Tübingen

Psycholinguistic experimental methods relying on mean reaction times (RT) and proportions of errors have been used to test semantic and pragmatic theories. However, these measures allow only for limited conclusions in cases when meaning representations are difficult to differentiate, e.g. if they are indistinguishable in terms of their truth conditions. We discuss an extension of this approach using the Diffusion Decision Model (DDM), a stochastic model of binary decision processes that accounts not only for mean RT and proportions of responses but for their entire joint distribution. These distributions are determined by a small number of model parameters that correspond to distinct components of the decision process and can be related back to semantic and pragmatic notions in a transparent way. We apply the model to three case studies, in which meaning representations and their processing consequences have so far resisted a compelling account in terms of notions from formal semantics and pragmatics. The first test case is a comparison between positive and negative quantifying expressions; the second concerns the comparison between superlative and comparative proportional quantifiers (most vs. more than half); the third study tests how stable are linguistic biases of meaning representations. Based on these three case studies, we illustrate different experimental manipulations that can be modeled using the DDM. We also show different variations of the DDM and how they can be fit to experimental data. Finally, based on these results we exemplify the type of questions that can be addressed in this kind of analysis and the type of conclusions that can be drawn.