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Causal Structure of Moral Dilemmas Predicts Perceived Difficulty of Making a Decision

Barbara Kuhnert*, Felix Lindner, Martin Mose Bentzen, Marco Ragni

We introduce causal agency models as a modeling technique for representing and reasoning about ethical dilemmas. We find that ethical dilemmas, although they look similar on the surface, have very different causal structures. Based on their structural properties, as identified by the causal agency models, we cluster a set of dilemmas in Type 1 and Type 2 dilemmas. We observe that for Type 2 dilemmas but not for Type 1 dilemmas, a utilitarian action Pareto dominates the possibility of refraining from action. Based on the model, we hypothesize, that Type 2 dilemmas are perceived as less difficult than Type 1 dilemmas.

We conducted an experiment with 60 participants. Participants received well-known dilemma situations and had to rate the difficulty of making a decision between each two dilemmas. Thereby the *Runaway Trolley Dilemma* and the *Pregnancy Dilemma* represented the dilemma of Type 1, the *Boat Dilemma* represented a Type 2 dilemma [1].

The results of the participants' rating of the difficulty supports the models' predictions. As hypothesized, a forced decision between the structurally similar dilemmas *Pregnancy* and *Runaway Trolley* leads to no significant difference in the frequencies of evaluations. Participants rated the decision difficulty of these two dilemmas equally. This can mainly be explained by the dilemmas' same complexity of the formal structure. However, the questions concerning the decision difficulties between the ethical scenarios *Pregnancy* and *Overweight Boat* resp. *Runaway Trolley* and *Overweight Boat* resulted in reliable differences in the evaluation of the difficulty of the moral decision situation. In both cases, the *Boat Dilemma* was selected reliably less often as the more difficult decision situation. These results support our theory of a different formal structure and therefore a lower complexity of the *Boat Dilemma*. Once the participants have opted for a moral dilemma, their rating of the difficulty to find a decision in this decision situation is statistically equal in comparison to the rating of the participants who have chosen the other dilemma. The individual mean values show a tendency towards a lower decision difficulty in the *Boat Dilemma*.

To conclude, for Type 1 dilemmas, ethical principles predict different sets of permissible actions, and hence there is a conflict to resolve which is not present for Type 2 dilemmas. Not having such a severe conflict between the actions makes moral problems that are perceived as less difficult.

[1] Kuhnert, B., Lindner, F., Bentzen, M. M., & Ragni, M. (2017). Perceived difficulty of moral dilemmas depends on their causal structure: A formal model and preliminary results. In *39th Annual Meeting of the Cognitive Science Society (CogSci 2017)*.

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